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SECTION

WIPER, WASHER & HORN

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PRECAUTION

PRECAUTION

PPF:00011

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NKS000Z3

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

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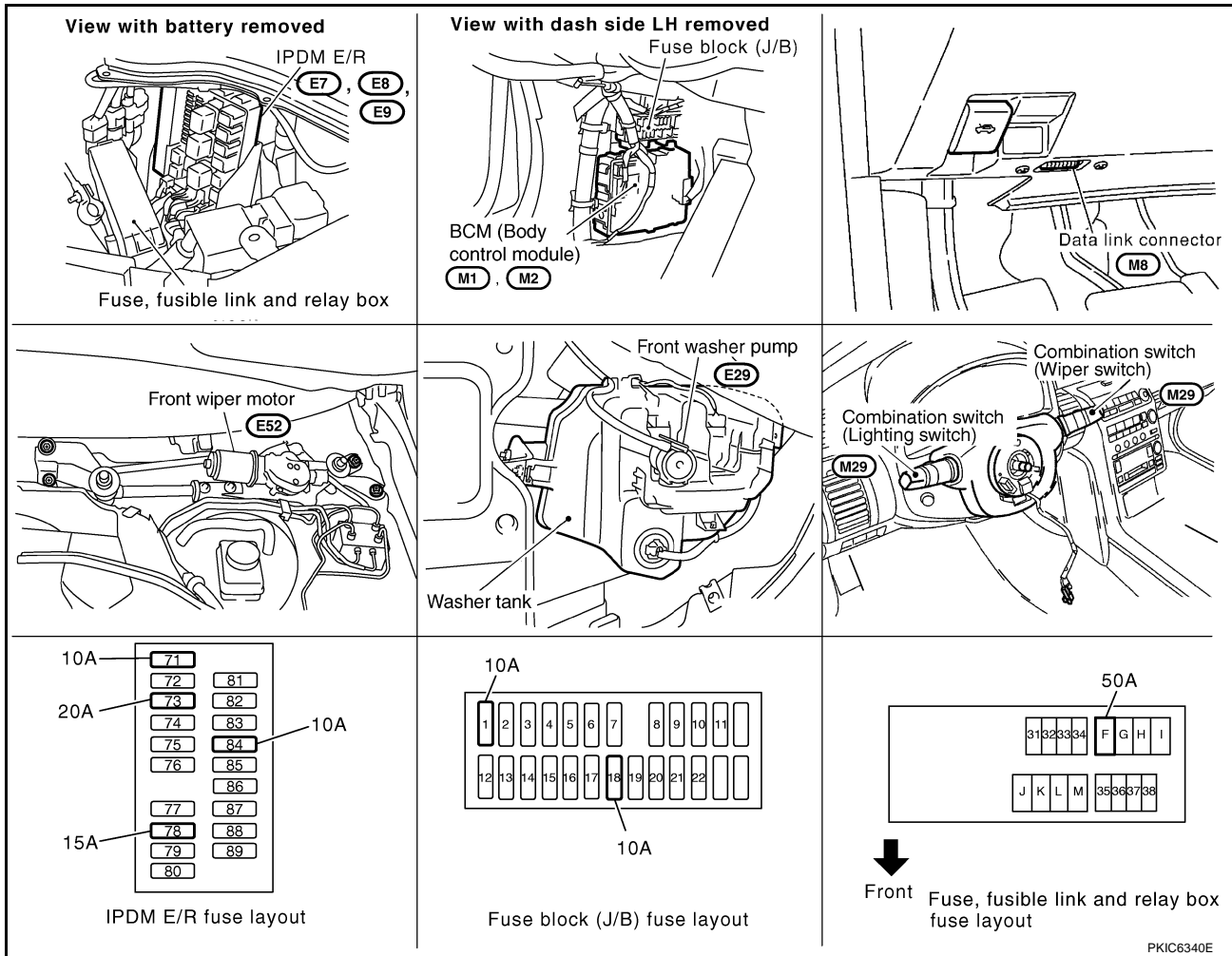
FRONT WIPER AND WASHER SYSTEM

FRONT WIPER AND WASHER SYSTEM

PFP:28810

Components Parts and Harness Connector Location

NKS000Z5



System Description

NKS000Z6

- All front wiper relays (HI, LO) are included in IPDM E/R (intelligent power distribution module engine room).
- Wiper switch (combination switch) is composed of a combination of 5 output terminals and 5 input terminals. Terminal combination status is read by BCM (body control module) when switch is turned ON.
- BCM controls front wiper LO, HI, and INT (intermittent) operation.
- IPDM E/R operates wiper motor according to CAN communication signals from BCM.

OUT LINE

Power is supplied at all times

- to ignition relay, located in IPDM E/R, from battery direct,
- through 50 A fusible link (letter F, located in fuse, fusible link and relay box)
- to BCM terminal 55,
- through 10 A fuse [No.18 located in fuse block (J/B)]
- to BCM terminal 42,
- through 20 A fuse (No.73 located in IPDM E/R)
- to front wiper relay, located in IPDM E/R,
- through 15 A fuse (No.78 located in IPDM E/R)
- to CPU located in IPDM E/R,
- through 10 A fuse (No.71 located in IPDM E/R)
- to CPU located in IPDM E/R.

FRONT WIPER AND WASHER SYSTEM

With the ignition switch in the ON or START position, power is supplied

- through ignition relay, located in IPDM E/R
- to front wiper relay, located in IPDM E/R,
- to front wiper high relay, located in IPDM E/R, and
- to CPU located in IPDM E/R,
- through 10 A fuse [No.1 located in fuse block (J/B)]
- to BCM terminal 38,
- through 10 A fuse (No.84 located in IPDM E/R)
- through IPDM E/R terminal 44
- to front washer pump terminal 2.

Ground is supplied

- to BCM terminal 52
- through grounds M30 and M66,
- to IPDM E/R terminals 38 and 60
- through grounds E17 and E43,
- to combination switch terminal 12
- through grounds M30 and M66.

LOW SPEED WIPER OPERATION

When the front wiper switch is in low position, BCM detect low speed wiper ON signal by BCM wiper switch reading function.

BCM sent front wiper request signal (LOW) with CAN communication line

- from BCM terminals 39 and 40
- to IPDM E/R terminals 48 and 49.

When the IPDM E/R receives front wiper request signal (LOW), it turns ON front wiper relay, located in the IPDM E/R, power is supplied

- to front wiper motor terminal 3
- through IPDM E/R terminal 21 and front wiper high relay and front wiper relay.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E17 and E43.

with power and ground is supplied, front wiper motor operates at low speed.

HIGH SPEED WIPER OPERATION

When the front wiper switch is in HI position, BCM detect high speed wiper ON signal by BCM wiper switch reading function.

BCM sent front wiper request signal (HI) with CAN communication line

- from BCM terminals 39 and 40
- to IPDM E/R terminals 48 and 49.

When the IPDM E/R receives front wiper request signal (HI), it turns ON front wiper relay, located in IPDM E/R, power is supplied

- to front wiper motor terminal 5
- through IPDM E/R terminal 31 and front wiper high relay and front wiper relay.

Ground is supplied

- to front wiper motor terminal 2
- through grounds E17 and E43.

with power and ground is supplied, front wiper motor operates at high speed.

INTERMITTENT OPERATION

Front wiper intermittent operation delay interval is determined from a combination of 3 switches (intermittent operation INT VOLUME 1, 2, and 3) and vehicle speed signal.

After each intermittent operation delay interval, BCM sends front wiper request signal to IPDM E/R.

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FRONT WIPER AND WASHER SYSTEM

Wiper Intermittent Dial Position Setting

Wiper intermittent dial position	Intermittent operation interval	Combination switch		
		Intermittent operation INT VOLUME 1	Intermittent operation INT VOLUME 2	Intermittent operation INT VOLUME 3
1	Short ↑ ↓ Long	ON	ON	ON
2		ON	ON	OFF
3		ON	OFF	OFF
4		OFF	OFF	OFF
5		OFF	OFF	ON
6		OFF	ON	ON
7		OFF	ON	OFF

Example: For wiper intermittent dial position 1

Using combination switch reading function, BCM detects ON/OFF status of intermittent operation INT VOLUME 1, 2, and 3.

When combination switch status is as listed below, BCM determines that it is wiper Intermittent dial position 1.

- Intermittent operation INT VOLUME 1: ON (Continuity exists between combination switch output 3 and input 1.)
- Intermittent operation INT VOLUME 2: ON (Continuity exists between combination switch output 5 and input 1.)
- Intermittent operation INT VOLUME 3: ON (Continuity exists between combination switch output 4 and input 2.)

BCM determines front wiper intermittent operation delay interval from wiper Intermittent dial position and vehicle speed, and sends wiper request signal (INT) to IPDM E/R.

AUTO STOP OPERATION

With wiper switch turned OFF, wiper motor will continue to operate until wiper arms reach windshield base.

When the wiper arms are not located at base of windshield with wiper switch OFF, ground is provided

- from IPDM E/R terminal 21
- to front wiper motor terminal 3, in order to continue wiper motor operation at low speed,
- to IPDM E/R terminal 32
- through front wiper motor terminals 4 and 2
- through grounds E17 and E43.

When the wiper arms reach base of windshield, front wiper motor terminals 4 and 2 are connected, and ground is supplied

Then the IPDM E/R sends auto stop operation signal to BCM with CAN communication line.

When the BCM receives auto-stop operation signal, BCM sends wiper stop signal to IPDM E/R with CAN communication line.

IPDM E/R stops wiper motor. Wiper motor will then stop wiper arms at the STOP position.

WASHER OPERATION

When the wiper switch is in front wiper washer position, BCM detect front wiper washer signal by BCM wiper switch reading function. (Refer to [WW-7, "COMBINATION SWITCH READING FUNCTION"](#))

Combination switch ground is supplied

- to front washer pump terminal 1
- through combination switch terminal 11
- through combination switch terminal 12
- through grounds M30 and M66.

With ground is supplied, front washer pump is operated.

When the BCM detects that front washer pump has operated for 0.4 seconds or longer, BCM operates front wiper motor for low speed.

When the BCM detects washer switch is OFF, low speed operation cycles approximately 2 times and stops.

FRONT WIPER AND WASHER SYSTEM

MIST OPERATION

When the wiper switch is turned to the mist position, wiper low speed operation cycles once and then stops. For additional information about wiper operation under this condition, refer to [WW-5, "LOW SPEED WIPER OPERATION"](#).

If switch is held in mist position, low speed operation continues.

FAIL-SAFE FUNCTION

If an abnormality occurs in CAN communications, IPDM E/R holds the condition just before fail-safe status is initiated until ignition switch is turned OFF. (If wipers were operating in LO just before the initiation of fail-safe status, they continue to operate in LO until ignition switch is turned OFF.)

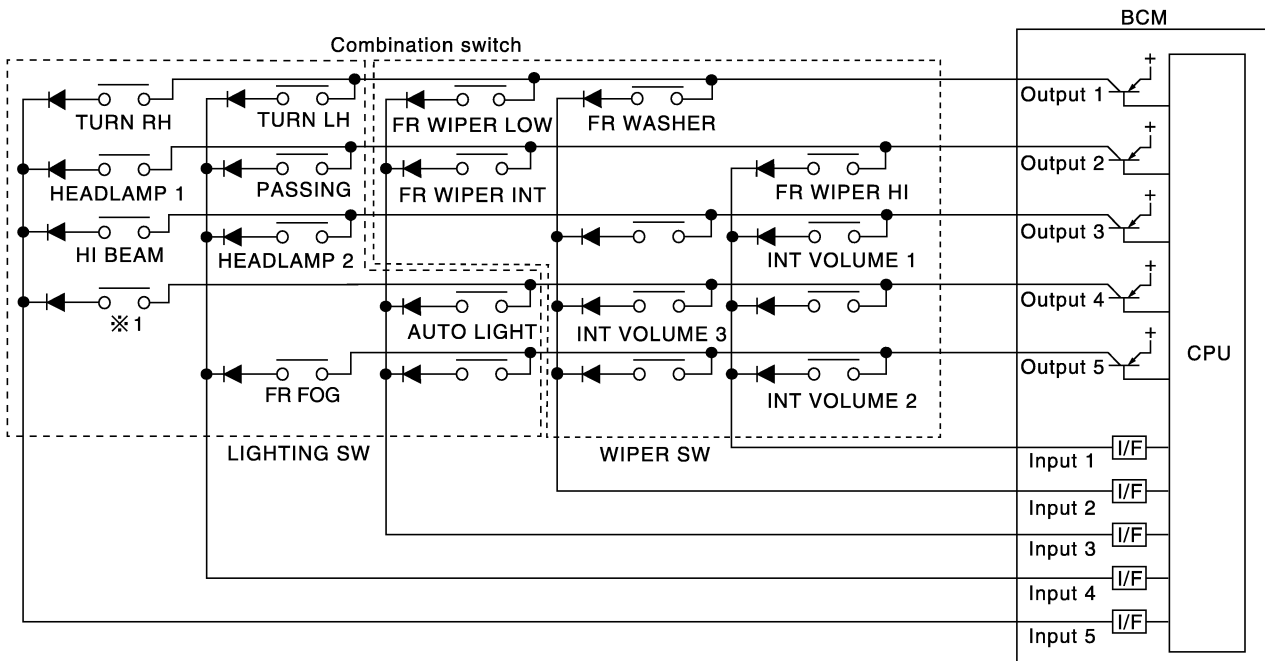
COMBINATION SWITCH READING FUNCTION

Description

- BCM reads combination switch (wiper) status, and controls related systems such as headlamps and wipers, according to the results.
- BCM reads information of a maximum of 20 switches by combining five output terminals (OUTPUT 1-5) and five input terminals (INPUT 1-5).

Operation Description

- BCM activates transistors of output terminals (OUTPUT 1-5) periodically, and allows current to flow in turn.
- If any (1 or more) switches are turned ON, circuit of output terminals (OUTPUT 1-5) and input terminals (INPUT 1-5) becomes active.
- At this time, transistors of output terminals (OUTPUT 1-5) are activated to allow current to flow. When voltage of input terminals (INPUT 1-5) corresponding to that switch changes, interface in BCM detects voltage change, and BCM determines that switch is ON.



※1 : LIGHTING SWITCH 1ST POSITION

PKIC6010E

FRONT WIPER AND WASHER SYSTEM

BCM - Operation Table of Combination Switches

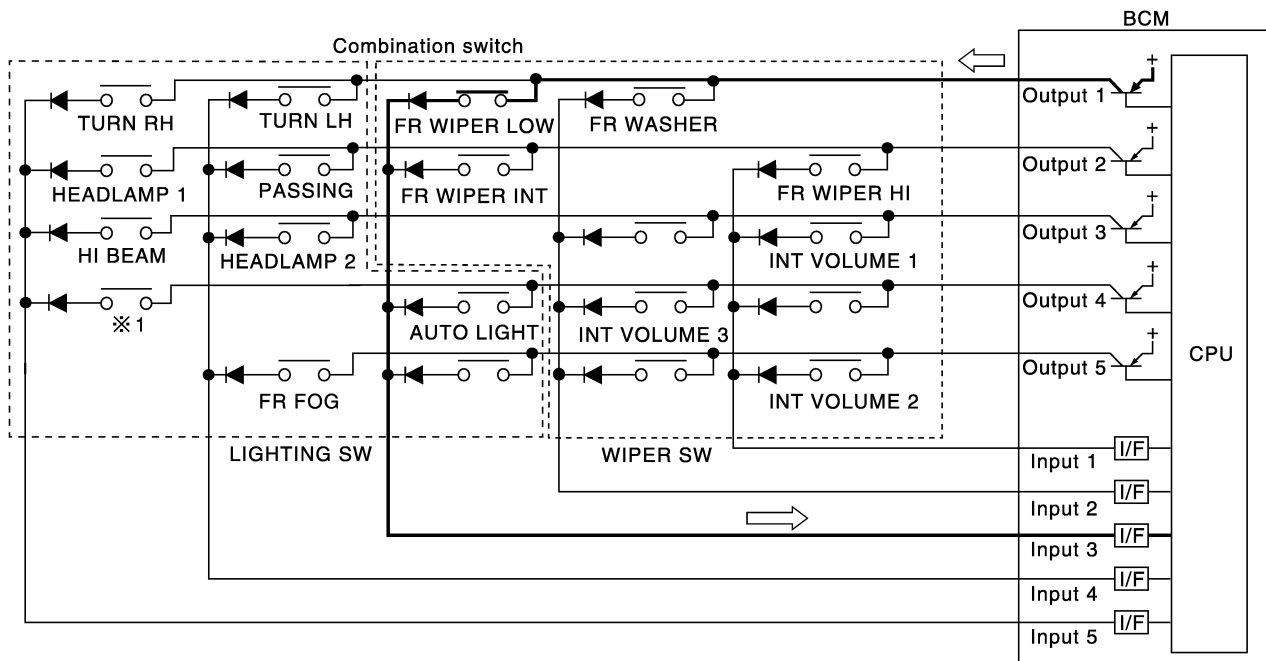
- BCM reads operation status of combination switch using combinations shown in table below.

	COMB SW OUTPUT 1		COMB SW OUTPUT 2		COMB SW OUTPUT 3		COMB SW OUTPUT 4		COMB SW OUTPUT 5	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
COMB SW INPUT 1	—	—	FR WIPER HI ON	FR WIPER HI OFF	INT VOLUME 1 ON	INT VOLUME 1 OFF	—	—	INT VOLUME 2 ON	INT VOLUME 2 OFF
COMB SW INPUT 2	FR WASHER ON	FR WASHER OFF	—	—	—	—	INT VOLUME 3 ON	INT VOLUME 3 OFF	—	—
COMB SW INPUT 3	FR WIPER LOW ON	FR WIPER LOW OFF	FR WIPER INT ON	FR WIPER INT OFF	—	—	AUTO LIGHT ON	AUTO LIGHT OFF	—	—
COMB SW INPUT 4	TURN LH ON	TURN LH OFF	PASSING ON	PASSING OFF	HEAD-LAMP 2 ON	HEAD-LAMP 2 OFF	—	—	FR FOG ON	FR FOG OFF
COMB SW INPUT 5	TURN RH ON	TURN RH OFF	HEAD-LAMP 1 ON	HEAD-LAMP 1 OFF	HI BEAM ON	HI BEAM OFF	LIGHTING SW (1st) ON	LIGHTING SW (1st) OFF	—	—

SKIA8640E

Sample Operation: (When Wiper Switch Turned to LOW Position)

- When wiper switch is turned to LOW position, front wiper LOW contact in combination switch turns ON. At this time if OUTPUT 1 transistor is activated, BCM detects that voltage changes in INPUT 3.
- When BCM detects that voltage changes in INPUT 3 while OUTPUT 1 transistor is ON, it judges that front wiper switch is in LOW position. Then BCM sends front wiper request signal (LO) to IPDM E/R using CAN communication.
- If BCM detects that voltage changes in INPUT 3 when OUTPUT 1 transistor is activated again, it recognizes that wiper switch is still in LOW position.



※1 : LIGHTING SWITCH 1ST POSITION

PKIC6011E

FRONT WIPER AND WASHER SYSTEM

NOTE:

Each OUTPUT terminal transistor is activated at 10 ms intervals. Therefore after switch is turned ON, electrical loads are activated with time delay. But this time delay is so short that it cannot be detected by human senses.

Operation Mode

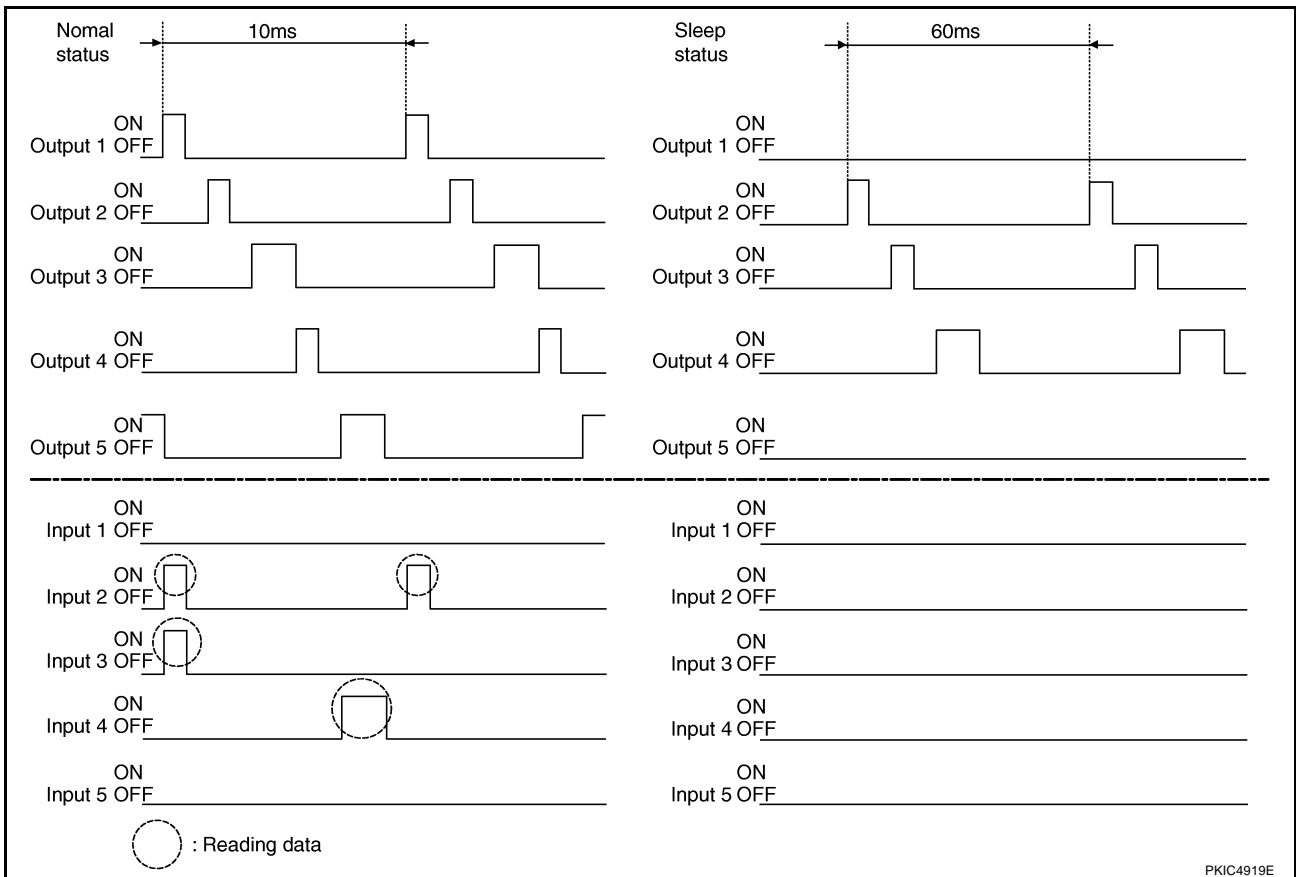
Combination switch reading function has operation modes shown below.

1. Normal status

- When BCM is not in sleep status, OUTPUT terminals (1-5) each turn ON-OFF every 10 ms.

2. Sleep status

- When BCM is in sleep status, transistors of OUTPUT (1 and 5) stop the output, and BCM enters low current consumption mode. OUTPUT (2, 3, and 4) turn ON-OFF every 60 ms, and only input from light switch system is accepted.



Intermittent Operation

Wiper intermittent operation delay interval is determined from a combination of 3 switches (intermittent operation dial position 1, intermittent operation dial position 2, and intermittent operation dial position 3) and vehicle speed signal.

During each intermittent operation delay interval, BCM sends front wiper request signal to IPDM E/R.

CAN Communication System Description

NKS00027

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-board multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

CAN Communication Unit

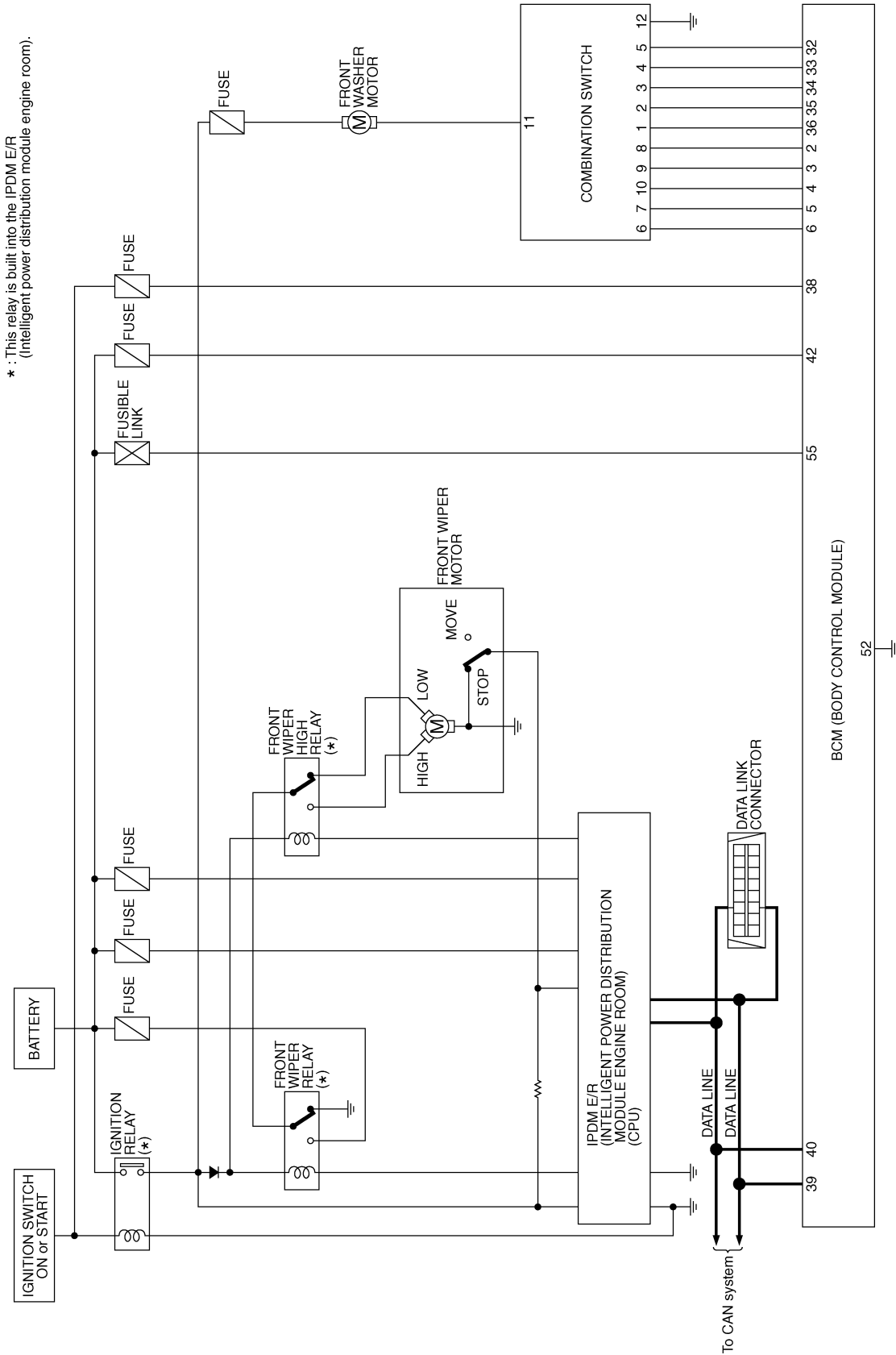
NKS00028

Refer to [LAN-27, "CAN Communication Unit"](#).

FRONT WIPER AND WASHER SYSTEM

Schematic

NKS000Z9



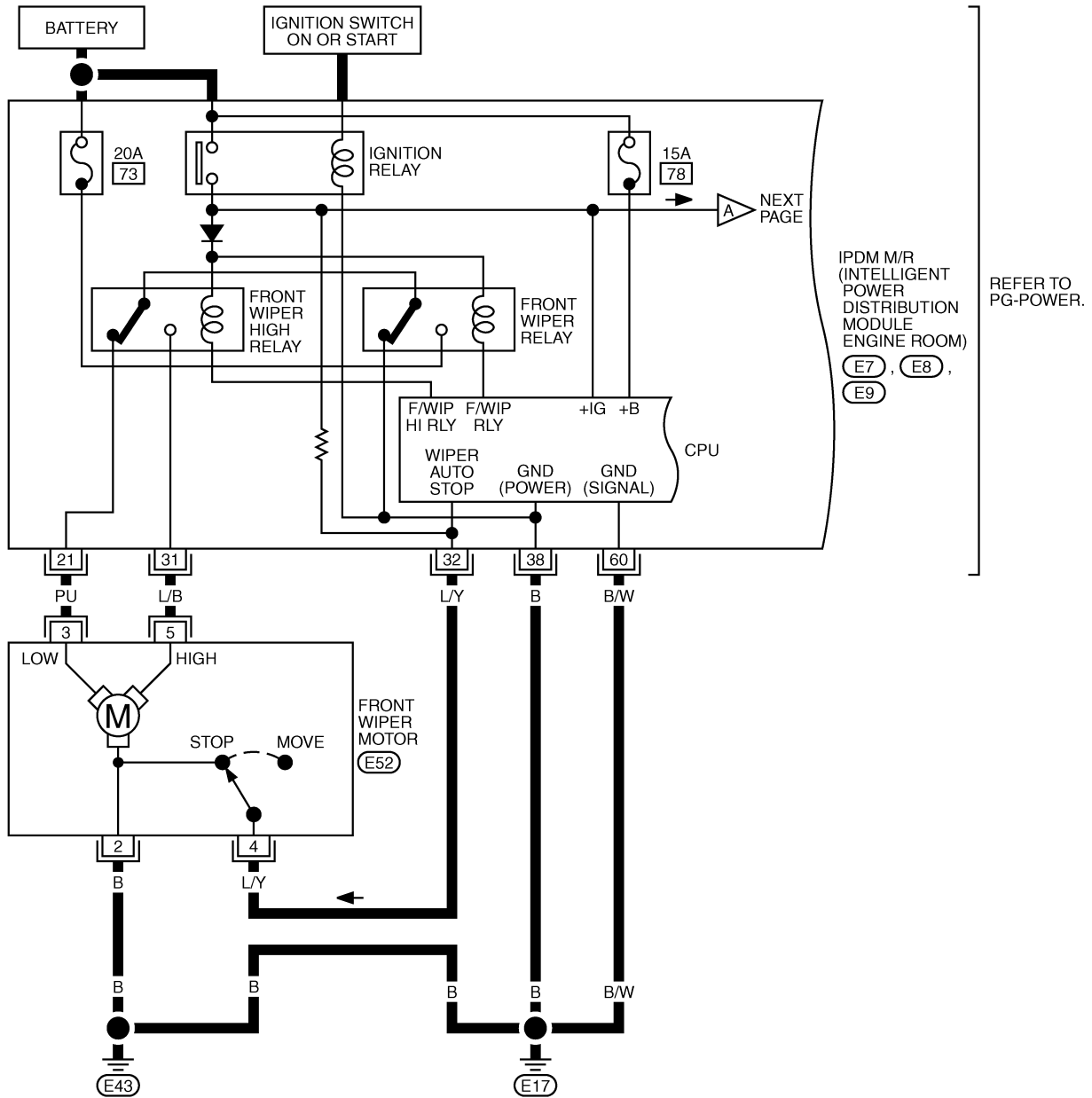
TKWM0906E

FRONT WIPER AND WASHER SYSTEM

Wiring Diagram — WIPER —

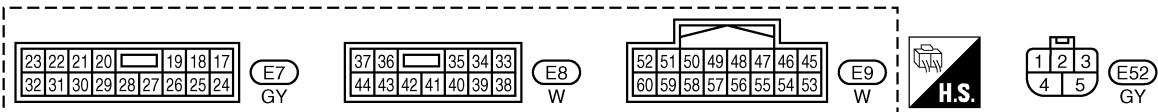
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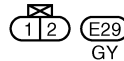
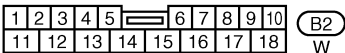
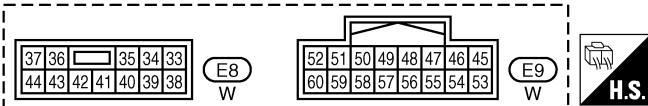
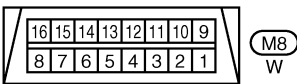
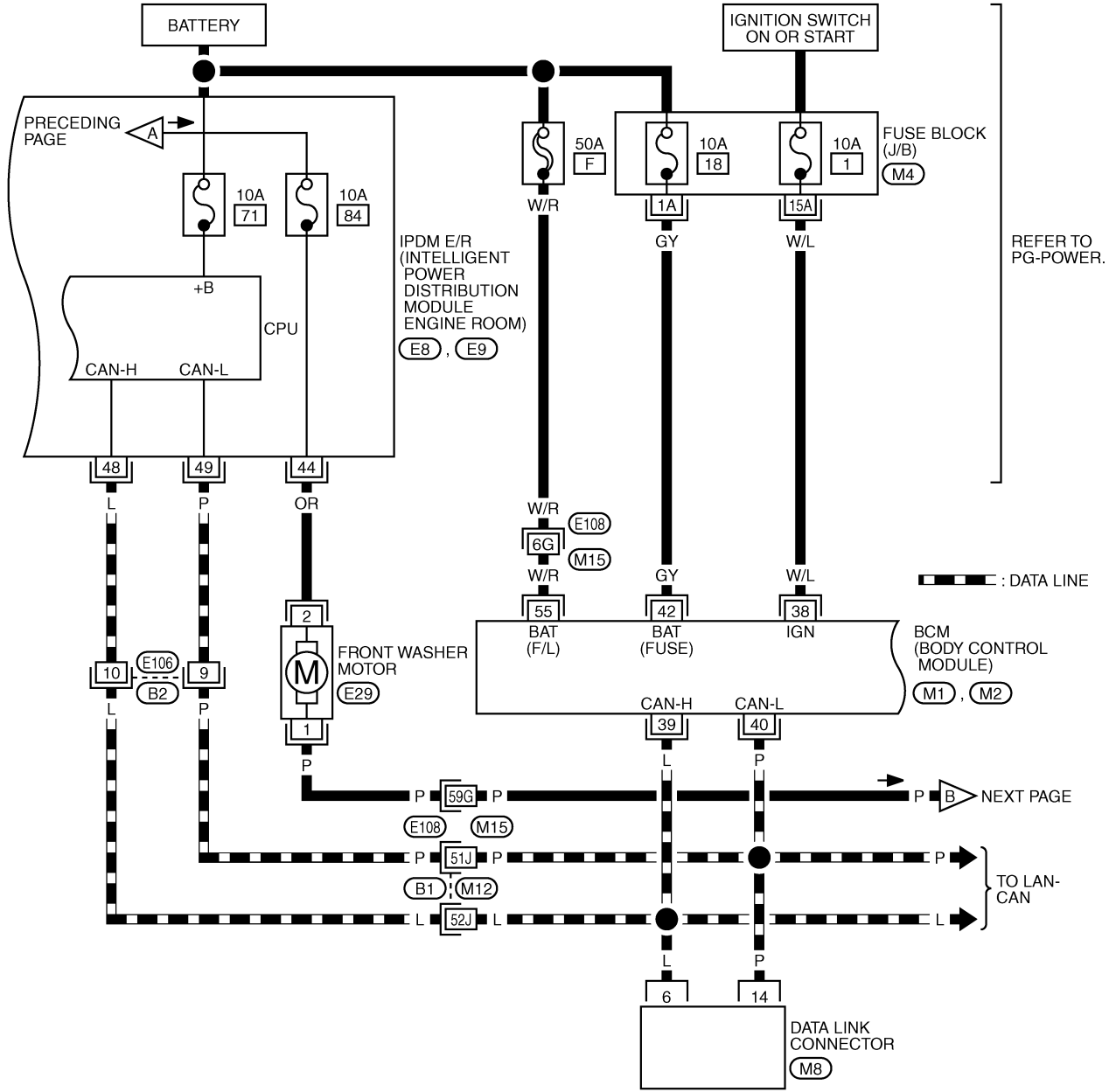
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TKWM2105E

FRONT WIPER AND WASHER SYSTEM

WW-WIPER-02



REFER TO THE FOLLOWING.

(E108), (B1) -SUPER MULTIPLE JUNCTION (SMJ)

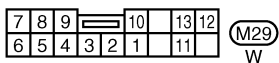
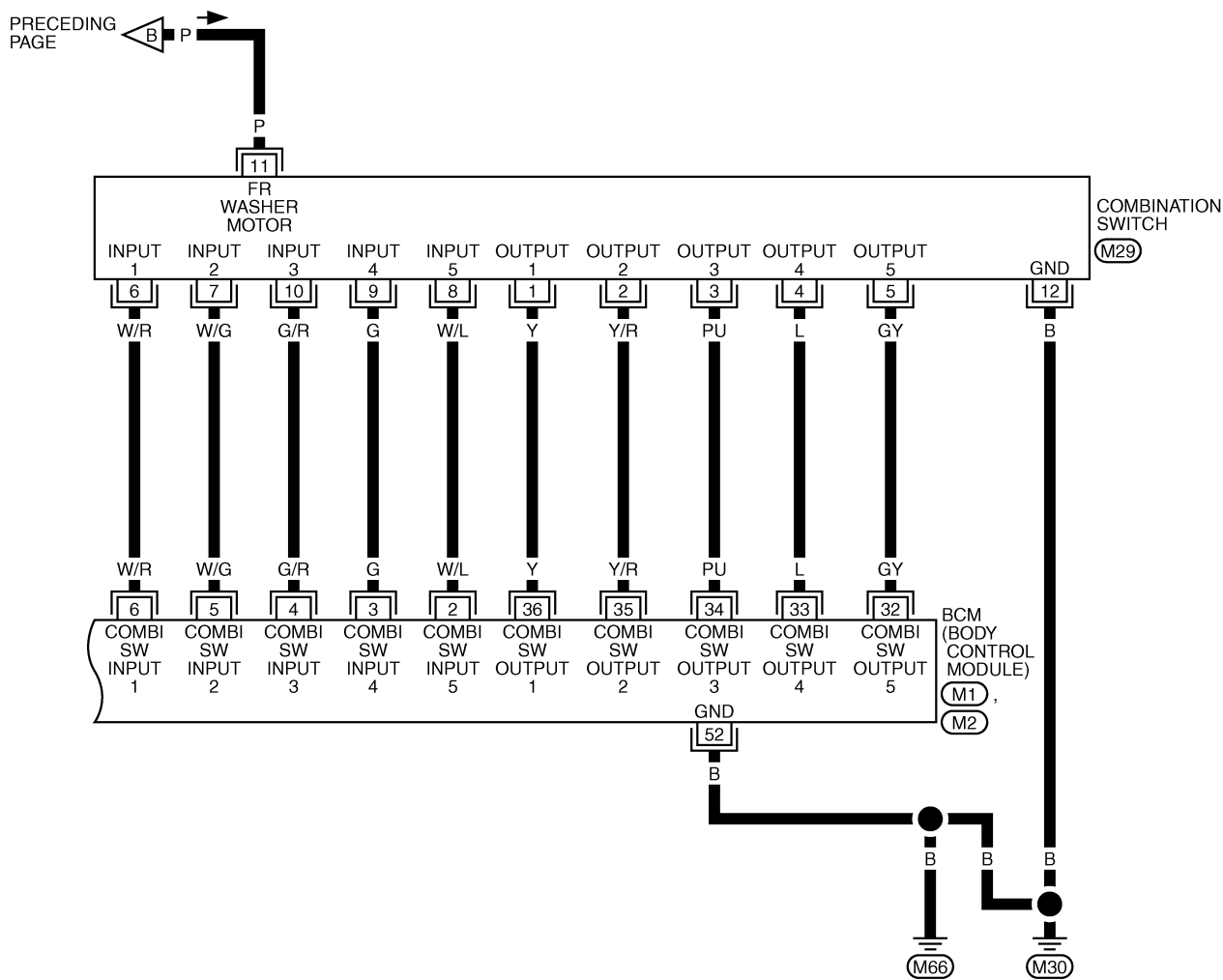
(M4) -FUSE BLOCK-JUNCTION BOX (J/B)

(M1), (M2) -ELECTRICAL UNITS

TKWM2106E

FRONT WIPER AND WASHER SYSTEM

WW-WIPER-03



REFER TO THE FOLLOWING.
(M1), (M2) -ELECTRICAL
UNITS

TKWM2107E

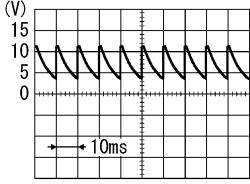
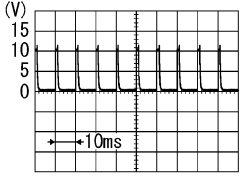
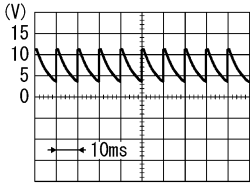
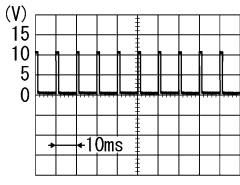
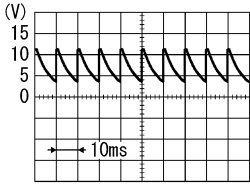
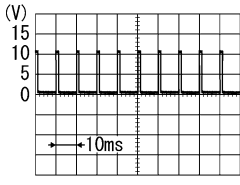
FRONT WIPER AND WASHER SYSTEM

Terminals and Reference Values for BCM

NKS000ZB

Terminal No.	Wire color	Signal name	Measuring condition		Reference value	
			Ignition switch	Operation or condition		
4	G/R	Combination switch input 3	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF	Approx. 0 V
					Any of the conditions below <ul style="list-style-type: none"> ● Front wiper switch MIST ● Front wiper switch INT ● Front wiper switch LO 	<p style="text-align: right; font-size: small;">PKIB4959J</p>
5	W/G	Combination switch input 2	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	Approx. 0 V
					Any of the conditions below <ul style="list-style-type: none"> ● Front washer switch ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6 	<p style="text-align: right; font-size: small;">PKIB4959J</p>
6	W/R	Combination switch input 1	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)	Approx. 0 V
					Any of the conditions below <ul style="list-style-type: none"> ● Front wiper switch HI ● Wiper intermittent dial position 3 	<p style="text-align: right; font-size: small;">PKIB4959J</p>
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 	<p style="text-align: right; font-size: small;">PKIB4952J</p>
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7 	<p style="text-align: right; font-size: small;">PKIB4955J</p>

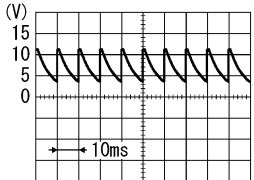
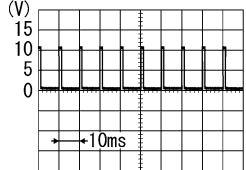
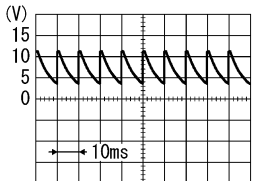
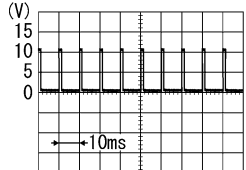
FRONT WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
32	GY	Combination switch output 5	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 6 ● Wiper intermittent dial position 7  <p style="text-align: right;">PKIB4956J</p> <p style="text-align: center;">Approx. 1.0 V</p>
33	L	Combination switch output 4	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 5 ● Wiper intermittent dial position 6  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>
34	PU	Combination switch output 3	ON	Lighting, turn, wiper switch	OFF (Wiper intermittent dial position 4)  <p style="text-align: right;">PKIB4960J</p> <p style="text-align: center;">Approx. 7.2 V</p>
					Any of the conditions below <ul style="list-style-type: none"> ● Wiper intermittent dial position 1 ● Wiper intermittent dial position 2 ● Wiper intermittent dial position 3  <p style="text-align: right;">PKIB4958J</p> <p style="text-align: center;">Approx. 1.2 V</p>

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FRONT WIPER AND WASHER SYSTEM

Terminal No.	Wire color	Signal name	Measuring condition		Reference value
			Ignition switch	Operation or condition	
35	Y/R	Combination switch output 2	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF  Approx. 7.2 V
					Any of the conditions below <ul style="list-style-type: none"> ● Front wiper switch INT ● Front wiper switch HI  Approx. 1.2 V
36	Y	Combination switch output 1	ON	Lighting, turn, wiper switch (Wiper intermittent dial position 4)	OFF  Approx. 7.2 V
					Any of the conditions below <ul style="list-style-type: none"> ● Front wiper switch MIST ● Front wiper switch LO ● Front washer switch  Approx. 1.2 V
38	W/L	Ignition switch (ON)	ON	—	Battery voltage
39	L	CAN - H	—	—	—
40	P	CAN - L	—	—	—
42	GY	Battery power supply	OFF	—	Battery voltage
52	B	Ground	ON	—	Approx. 0 V
55	W/R	Battery power supply	OFF	—	Battery voltage

FRONT WIPER AND WASHER SYSTEM

Terminals and Reference Values for IPDM E/R

NKS000ZC

Terminal No.	Wire color	Signal name	Measuring condition		Reference value	
			Ignition switch	Operation or condition		
21	PU	Low speed signal	ON	Wiper switch	OFF	Approx. 0V
					LOW	Battery voltage
31	L/B	High speed signal	ON	Wiper switch	OFF	Approx. 0V
					HI	Battery voltage
32	L/Y	Wiper auto - stop signal	ON	Wiper operating		Battery voltage
				Wiper stopped		Approx. 0V
38	B	Ground	ON	—	—	Approx. 0V
44	OR	Washer pump power supply	ON	—	—	Battery voltage
48	L	CAN – H	—	—	—	—
49	P	CAN – L	—	—	—	—
60	B/W	Ground	ON	—	—	Approx. 0V

How to Proceed With Trouble Diagnosis

NKS000ZD

1. Confirm symptoms and customer complaint.
2. Understand operation description and function description. Refer to [WW-4, "System Description"](#).
3. Perform preliminary check. Refer to [WW-17, "Preliminary Check"](#).
4. Check symptom and repair or replace malfunctioning parts.
5. Does front wiper and washer operate normally? If YES, GO TO 6. If NO, GO TO 4.
6. INSPECTION END

Preliminary Check

NKS000ZE

CHECK POWER SUPPLY AND GROUND CIRCUIT

1. CHECK FUSE

Check for blown fuses.

Unit	Power source	Fuse and fusible link No.
Front washer pump	Ignition switch ON or START	84
Front wiper motor, front wiper relay, front wiper HI relay	Battery	73
BCM	Battery	F
		18
	Ignition switch ON or START	1

Refer to [WW-11, "Wiring Diagram — WIPER —"](#).

OK or NG

OK >> GO TO 2

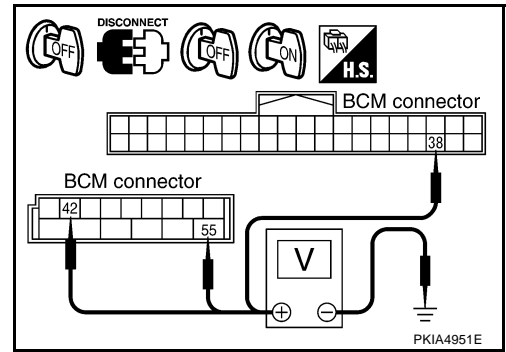
NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#).

FRONT WIPER AND WASHER SYSTEM

2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check voltage between BCM harness connector terminal and ground.

Terminal (+)		Terminal (-)	Ignition switch position	
Connector	Terminal		OFF	ON
M2	42	Ground	Battery voltage	Battery voltage
M2	55		Battery voltage	Battery voltage
M1	38		Approx. 0V	Battery voltage



OK or NG

OK >> GO TO 3.

NG >> Check harness for open or short between fuse, fusible link and BCM.

3. CHECK GROUND CIRCUIT

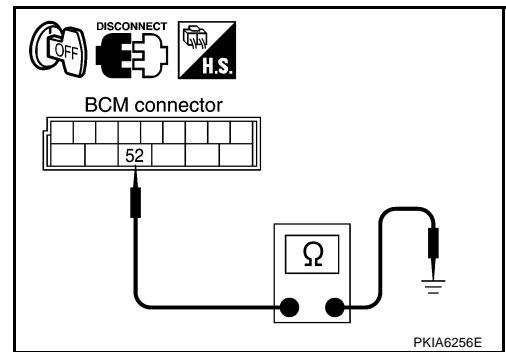
Check continuity between BCM harness connector and ground.

Connector	Terminal	Ground	Continuity
M2	52		Yes

OK or NG

OK >> INSPECTION END

NG >> Check harness ground circuit.



CONSULT-II Functions (BCM)

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

BCM diagnosis position	Diagnosis mode	Description
WIPER	WORK SUPPORT	Changes the setting for each function.
	DATA MONITOR	Displays BCM input data in real time.
	ACTIVE TEST	Device operation can be checked by applying a drive signal to device.
BCM	SELF-DIAG RESULTS	BCM performs self-diagnosis of CAN communication.
	CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.

CONSULT-II BASIC OPERATION

Refer to [GI-38. "CONSULT-II Start Procedure"](#) .

WORK SUPPORT

Operation Procedure

1. Touch "WIPER" on "SELECT TEST ITEM" screen.
2. Touch "WORK SUPPORT" on "SELECT DIAG MODE" screen.
3. Touch "WIPER SPEED SETTING" on "SELECT WORK ITEM" screen.
4. Touch "START".
5. Touch "CHANGE SET".
6. The setting will be changed and "CUSTOMIZING COMPLETED" will be displayed.
7. Touch "END".

FRONT WIPER AND WASHER SYSTEM

Display Item List

Item	Description	CONSULT-II	Factory setting
WIPER SPEED SETTING	Vehicle speed sousing type wiper control mode can be changed in this mode. Vehicle speed sousing type wiper control mode between two ON/OFF.	ON	×
		OFF	—

DATA MONITOR

Operation Procedure

1. Touch "WIPER" on "SELECT TEST ITEM" screen.
2. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on "SELECT MONITOR ITEM" screen.

ALL SIGNALS	Monitors all the signals.
SELECTION FROM MENU	Selects items and monitor them.

4. When "SELECTION FROM MENU" is selected, touch items to be monitored. When "ALL SIGNALS" is selected, all the items will be monitored.
5. Touch "START".
6. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".

Display Item List

Monitor item	Contents
IGN ON SW "ON/OFF"	Displays status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal.
IGN SW CAN "ON/OFF"	Displays status (ignition switch IGN position: ON/other: OFF) of ignition switch judged from the ignition switch signal (CAN communication lines).
FR WIPER HI "ON/OFF"	Displays status (front wiper switch high position: ON/other: OFF) of front wiper high switch judged from the wiper switch signal.
FR WIPER LOW "ON/OFF"	Displays status (front wiper switch low position: ON/other: OFF) of front wiper low switch judged from the wiper switch signal.
FR WIPER INT "ON/OFF"	Displays status (front wiper switch intermittent position: ON/other: OFF) of front wiper intermittent switch judged from the wiper switch signal.
FR WASHER SW "ON/OFF"	Displays status (front washer switch ON position: ON/other: OFF) of front washer switch judged from the wiper switch signal.
INT VOLUME "1 - 7"	Displays status (wiper intermittent dial position setting 1-7) of intermittent volume switch judged from the wiper switch signal.
FR WIPER STOP "ON/OFF"	Displays status (front wiper stop position: ON/move: OFF) of front wiper motor stop judged from the front wiper auto stop signal.
VEHICLE SPEED "km/h"	Displays status vehicle speed as judged from vehicle speed signal.
RR WIPER ON ^{NOTE} "OFF"	—
RR WIPER INT ^{NOTE} "OFF"	—
RR WASHER SW ^{NOTE} "OFF"	—
RR WIPER STOP ^{NOTE} "OFF"	—
RR WIPER STP2 ^{NOTE} "OFF"	—

NOTE:

This item is displayed, but cannot be monitored.

ACTIVE TEST

Operation Procedure

1. Touch "WIPER" on "SELECT TEST ITEM" screen.
2. Touch "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Touch item to be tested and check operation of the selected item.
4. During the operation check, touching "BACK" deactivates the operation.

FRONT WIPER AND WASHER SYSTEM

Display Item List

Test item	Display on CONSULT-II screen	Description
Front wiper output	FR WIPER	With a certain operation (OFF, HI, LO, INT), front wiper can be operated.
Rear wiper output ^{NOTE}	RR WIPER	—

NOTE:

This item is displayed, but cannot be tested.

CONSULT-II Functions (IPDM E/R)

NKS000ZG

CONSULT-II can display each diagnostic item using the diagnostic test modes shown following.

Diagnosis Mode	Description
SELF-DIAG RESULTS	Refer to PG-19. "SELF-DIAG RESULTS" .
DATA MONITOR	The input/output data of IPDM E/R is displayed in real time.
CAN DIAG SUPPORT MNTR	The result of transmit/receive diagnosis of CAN communication can be read.
ACTIVE TEST	IPDM E/R sends a drive signal to electronic components to check their operation.

CONSULT-II BASIC OPERATION

Refer to [GI-38. "CONSULT-II Start Procedure"](#) .

DATA MONITOR

Operation Procedure

1. Touch "DATA MONITOR" on "SELECT DIAG MODE " screen.
2. Touch "ALL SIGNALS", "MAIN SIGNALS" or "SELECTION FROM MENU" on "SELECT MONITOR ITEM" screen.

ALL SIGNALS	Monitors all items.
MAIN SIGNALS	Monitor the predetermined item.
SELECTION FROM MENU	Selects items and monitors them.

3. When "SELECTION FROM MENU" is selected, touched items to be monitored. In "ALL SIGNALS", all items are monitored. In "MAIN SIGNALS", predetermined items are monitored.
4. Touch "START".
5. Touch "RECORD" while monitoring to record the status of the item being monitored. To stop recording, touch "STOP".

All Signals, Main Signals, Selection From Menu

Item name	CONSULT-II screen display	Display or unit	Monitor item selection			Description
			ALL SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
FR wiper request	FR WIP REQ	STOP/LOW/HI	×	×	×	Signal status input from BCM
Wiper auto stop	WIP AUTO STOP	ACT P/STOP P	×	×	×	Output status of IPDM E/R
Wiper protection	WIP PROT	OFF/BLOCK	×	×	×	Control status of IPDM E/R

NOTE:

Perform monitoring of IPDM E/R data with ignition switch ON. When ignition switch is at ACC, the display may not be correct.

ACTIVE TEST

Operation Procedure

1. Touch "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Touch item to be tested, and check operation.
3. Touch "START".
4. Touch "STOP" while testing to stop the operation.

FRONT WIPER AND WASHER SYSTEM

Test item	CONSULT-II screen display	Description
Front wiper (HI, LO) output	FR WIPER	With a certain operation (OFF, HI ON, LO ON), front wiper relay (Lo, Hi) can be operated.

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FRONT WIPER AND WASHER SYSTEM

NKS000ZH

Front Wiper Does Not Operate

CAUTION:

- During IPDM E/R fail-safe control, front wipers may not operate. Refer to [PG-16, "CAN COMMUNICATION LINE CONTROL"](#) in "PG IPDM E/R" to make sure that it is not in fail-safe status.

1. ACTIVE TEST

With CONSULT-II

- Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
- Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
- Touch "LO" or "HI" screen.

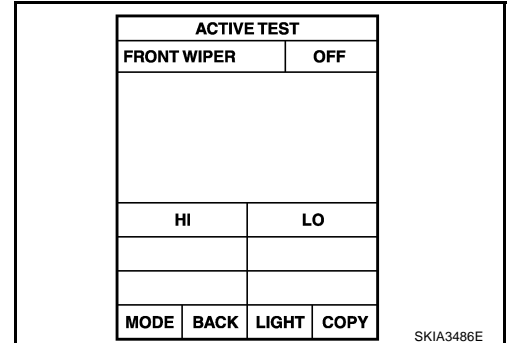
Without CONSULT-II

Start auto active test. Refer to [PG-22, "Auto Active Test"](#).

Does front wiper operate normally?

YES >> GO TO 5.

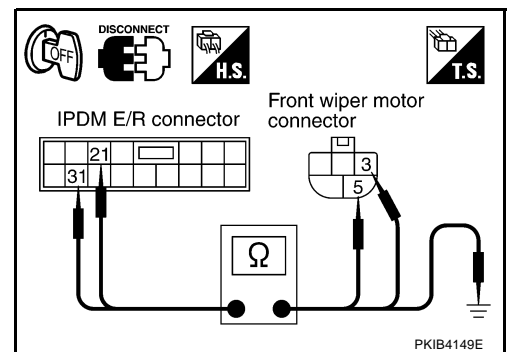
NO >> GO TO 2.



2. CHECK FRONT WIPER CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R connector and front wiper motor connector.
- Check continuity between IPDM E/R harness connector and front wiper motor harness connector.

Terminal				Continuity
IPDM E/R		Front wiper motor		
Connector	Terminal	Connector	Terminal	
E7	21	E52	3	Yes
	31		5	



- Check continuity between IPDM E/R harness connector and ground.

Terminal				Continuity
IPDM E/R		Ground		
Connector	Terminal			
E7	21			No
	31			

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

FRONT WIPER AND WASHER SYSTEM

3. CHECK GROUND CIRCUIT

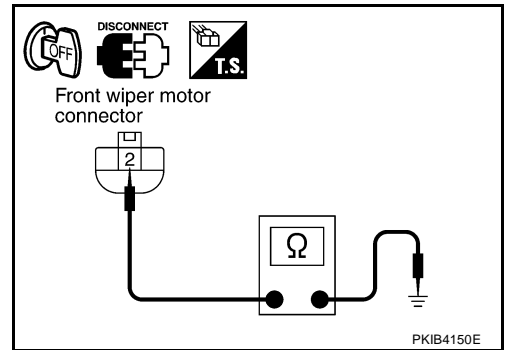
Check continuity between front wiper motor harness connector E52 terminal 2 and ground.

2 – Ground : Continuity should exist.

OK or NG

OK >> GO TO 4.

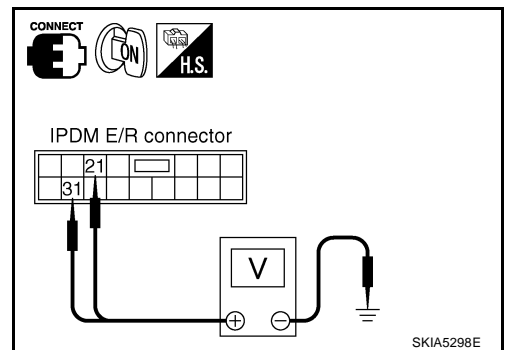
NG >> Repair harness or connector.



4. CHECK IPDM E/R

④ With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "LO" or "HI" screen.
5. Check voltage between IPDM E/R harness connector and ground while front wiper (HI, LO) is operating.



Terminal		Condition	Voltage
IPDM E/R (+)			
Connector	Terminal	(-)	
E7	21	Stopped	Approx. 0V
		LO operation	Battery voltage
	31	Stopped	Approx. 0V
		HI operation	Battery voltage

⊗ Without CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start auto active test. Refer to [PG-22, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector and ground while front wiper (HI, LO) is operating.

Terminal		Condition	Voltage
IPDM E/R (+)			
Connector	Terminal	(-)	
E7	21	Stopped	Approx. 0V
		LO operation	Battery voltage
	31	Stopped	Approx. 0V
		HI operation	Battery voltage

OK or NG

OK >> Replace front wiper motor.

NG >> Replace IPDM E/R.

FRONT WIPER AND WASHER SYSTEM

5. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

☑ With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", "FR WIPER LOW", and "FR WIPER HI" turn ON-OFF according to wiper switch operation.

☒ Without CONSULT-II

Refer to [LT-128, "Combination Switch Inspection"](#).

OK or NG

OK >> GO TO 6.

NG >> Check combination switch (wiper switch). Refer to [LT-128, "Combination Switch Inspection"](#).

DATA MONITOR	
MONITOR	
IGN ON SW	ON
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
Page Down	
RECORD	
MODE	BACK
LIGHT	COPE

PKIB0110E

6. CHECK CIRCUIT BETWEEN IPDM E/R AND BCM

Select "BCM" on CONSULT-II, and perform self-diagnosis for "BCM".

Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#).

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-17, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#).

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	
ERASE	PRINT
MODE	BACK
LIGHT	COPY

NKS000Z1

Front Wiper Does Not Return to Stop Position

1. CHECK FRONT WIPER STOP SIGNAL

☑ With CONSULT-II

Select "IPDM E/R" on CONSULT-II. With "DATA MONITOR", make sure that "WIP AUTO STOP" turns "ACT P" - "STOP P" linked with front wiper operation.

☒ Without CONSULT-II

GO TO 2.

OK or NG

OK >> Replace IPDM E/R.

NG >> GO TO 2.

DATA MONITOR	
MONITOR	
WIP AUTO STOP	STOP P
RECORD	
MODE	BACK
LIGHT	COPY

PKIA7614E

2. CHECK IPDM E/R

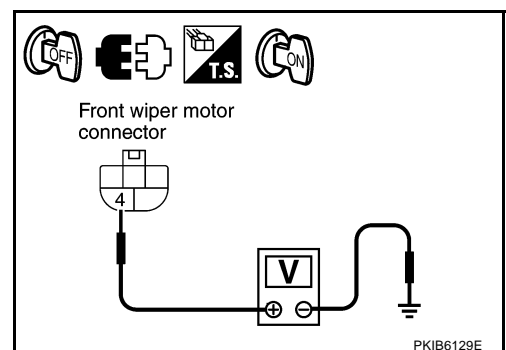
1. Turn ignition switch OFF.
2. Disconnect front wiper motor connector.
3. Turn ignition switch ON.
4. Check voltage between front wiper motor harness connector E52 terminal 4 and ground.

4 – Ground : Battery voltage.

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.



FRONT WIPER AND WASHER SYSTEM

3. CHECK FRONT WIPER AUTO STOP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 32 and front wiper motor harness connector E52 terminal 4.

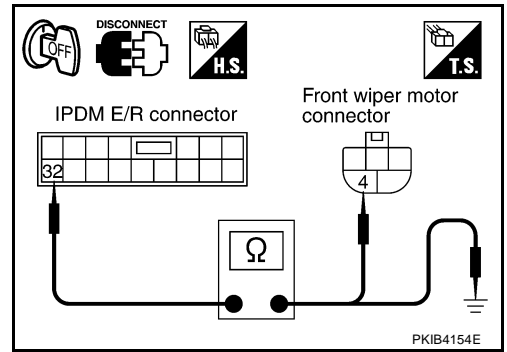
32 – 4 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 32 and ground.

32 – Ground : Continuity should not exist.

OK or NG

- OK >> Replace IPDM E/R.
 NG >> Repair harness or connector.



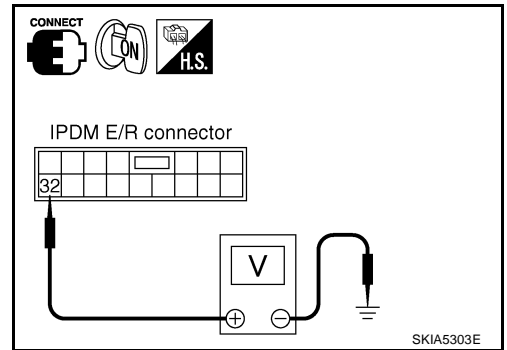
4. CHECK IPDM E/R

1. Connect IPDM E/R connector and front wiper motor connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector and ground while front wiper motor is stopped and while it is operating.

Terminal		Condition	Voltage	
IPDM E/R (+)				
Connector	Terminal	(-)		
E7	32	Ground	Wiper stopped	Approx. 0V
			Wiper operating	Battery voltage

OK or NG

- OK >> Replace IPDM E/R.
 NG >> Replace front wiper motor.



Only Front Wiper Low Does Not Operate

NKS000ZJ

1. ACTIVE TEST

Ⓟ With CONSULT-II

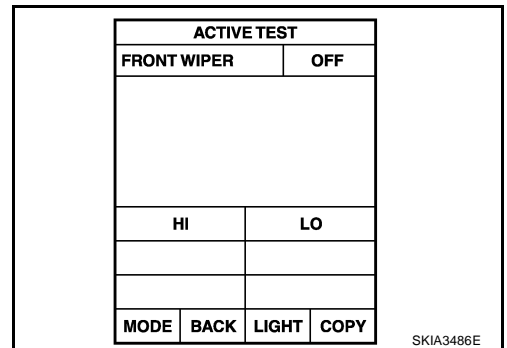
1. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Touch "LO" screen.

ⓧ Without CONSULT-II

Start auto active test. Refer to [PG-22, "Auto Active Test"](#).

Does front wiper operate normally?

- YES >> Refer to [LT-128, "Combination Switch Inspection"](#).
 NO >> GO TO 2.



FRONT WIPER AND WASHER SYSTEM

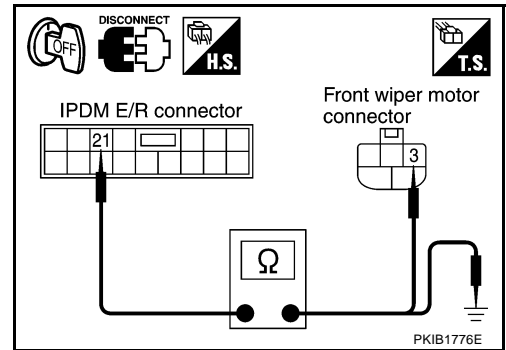
2. CHECK FRONT WIPER MOTOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 21 and front wiper motor harness E52 connector terminal 3.

21 – 3 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 21 and ground.

21 – Ground : Continuity should not exist.



OK or NG

OK >> GO TO 3.

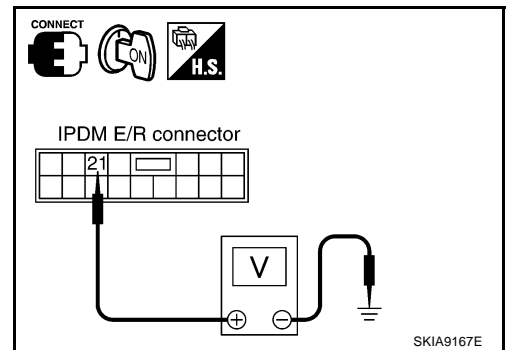
NG >> Repair harness or connector.

3. CHECK IPDM E/R

With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "LO" screen.
5. Check voltage between IPDM E/R harness connector E7 terminal 21 and ground while front wiper LO is operating.

21 – Ground : Battery voltage.



Without CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Start up auto active test. Refer to [PG-22, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector E7 terminal 21 and ground while front wiper LO is operating.

21 – Ground : Battery voltage.

OK or NG

OK >> Replace front wiper motor.

NG >> Replace IPDM E/R.

Only Front Wiper Hi Does Not Operate

NKS000ZK

1. ACTIVE TEST

With CONSULT-II

1. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
2. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
3. Touch "HI" screen.

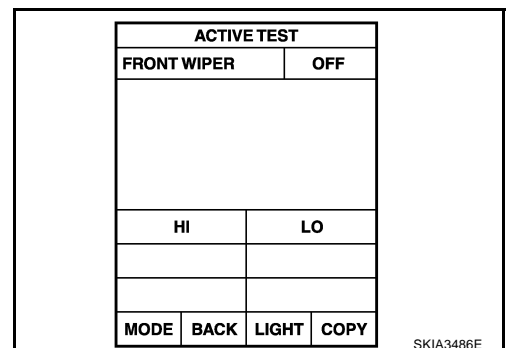
Without CONSULT-II

Start auto active test. Refer to [PG-22, "Auto Active Test"](#).

Does front wiper operate normally?

YES >> Refer to [LT-128, "Combination Switch Inspection"](#).

NO >> GO TO 2.



FRONT WIPER AND WASHER SYSTEM

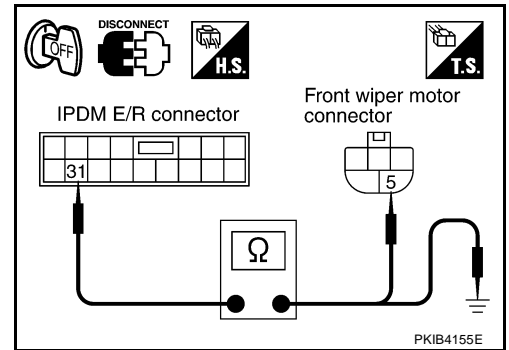
2. CHECK FRONT WIPER MOTOR CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 31 and front wiper motor harness E52 connector terminal 5.

31 – 5 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 31 and ground.

31 – Ground : Continuity should not exist.



OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.

3. CHECK IPDM E/R

Ⓜ With CONSULT-II

1. Connect IPDM E/R connector and front wiper motor connector.
2. Select "IPDM E/R" by CONSULT-II, and select "ACTIVE TEST" on "SELECT DIAG MODE" screen.
3. Select "FRONT WIPER" on "SELECT TEST ITEM" screen.
4. Touch "HI" screen.
5. Check voltage between IPDM E/R harness connector E7 terminal 31 and ground while front wiper HI is operating.

31 - Ground : Battery voltage.

⊗ Without CONSULT-II

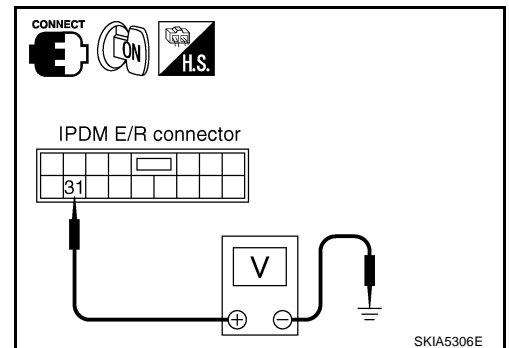
1. Connect IPDM E/R connector and front wiper motor connector.
2. Start auto active test. Refer to [PG-22, "Auto Active Test"](#).
3. Check voltage between IPDM E/R harness connector E7 terminal 31 and ground while front wiper HI is operating.

31 - Ground : Battery voltage.

OK or NG

OK >> Replace front wiper motor.

NG >> Replace IPDM E/R.



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FRONT WIPER AND WASHER SYSTEM

Only Front Wiper Intermittent Does Not Operate

NKS000ZL

1. CHECK COMBINATION SWITCH

 With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", turn ON-OFF according to wiper switch operation.

 Without CONSULT-II

Refer to [LT-128, "Combination Switch Inspection"](#) .

OK or NG

OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch) Refer to [LT-128, "Combination Switch Inspection"](#) .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
Page Down	
RECORD	
MODE	BACK
LIGHT	COPE

PKIB0110E

Front Wiper Interval Time Is Not Controlled by Vehicle Speed

NKS000ZM

1. CHECK FUNCTION OF COMBINATION METER

Confirm that speedometer operates normally.

Does front wiper operate normally?

YES >> GO TO 2.

NO >> Combination meter vehicle speed system malfunction. Refer to [DI-15, "Vehicle Speed Signal Inspection"](#) .

2. CHECK CAN COMMUNICATION BETWEEN BCM AND COMBINATION METER

Select "BCM" on CONSULT-II, and perform self-diagnosis for "BCM".

Displayed self-diagnosis results

NO DTC>>Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#) .

CAN COMM CIRCUIT>>Check CAN communication line of BCM. Refer to [BCS-17, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#) .

SELF-DIAG RESULTS	
DTC RESULTS	TIME
CAN COMM CIRCUIT [U1000]	
ERASE	PRINT
MODE	BACK
LIGHT	COPY

PKIA7627E

Front Wiper Intermittent Operation Switch Position Cannot Be Adjusted

NKS000ZN

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

 With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "INT VOLUME", changes in order form 1 to 7 according to wiper switch operation.

 Without CONSULT-II

Refer to [LT-128, "Combination Switch Inspection"](#) .

OK or NG

OK >> Replace BCM. Refer to [BCS-18, "Removal and Installation of BCM"](#) .

NG >> Check combination switch (wiper switch). Refer to [LT-128, "Combination Switch Inspection"](#) .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
Page Down	
RECORD	
MODE	BACK
LIGHT	COPE

PKIB0110E

FRONT WIPER AND WASHER SYSTEM

Wiper Does Not Wipe When Front Washer Operates

NKS000ZO

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

① With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WASHER SW" turn ON-OFF according to wiper switch operation.

⊗ Without CONSULT-II

Refer to [LT-128, "Combination Switch Inspection"](#).

OK or NG

OK >> Replace BCM Refer to [BCS-18, "Removal and Installation of BCM"](#).

NG >> Check combination switch (wiper switch). Refer to [LT-128, "Combination Switch Inspection"](#).

DATA MONITOR			
MONITOR			
IGN ON SW	ON		
IGN SW CAN	ON		
FR WIPER HI	OFF		
FR WIPER LOW	OFF		
FR WIPER INT	OFF		
FR WASHER SW	OFF		
INT VOLUME	7		
FR WIPER STOP	ON		
VEHICLE SPEED	0.0 km/h		
Page Down			
RECORD			
MODE	BACK	LIGHT	COPE

PKIB0110E

A
B
C
D
E
F
G
H
I
J
L
M

WW

FRONT WIPER AND WASHER SYSTEM

After Front Wiper Operate for 10 Seconds, They Stop for 20 Seconds, and After Repeating the Operations Five Times, They Become Inoperative

NKS0002P

CAUTION:

- When auto-stop signal has not varied for 10 seconds or longer while IPDM E/R is operating front wipers, IPDM E/R considers that front wipers are locked, and stops wiper output. That causes this symptom.
- This status can be checked by “DATA MONITOR” of “IPDM E/R” on which “WIPER PROTECTION” item shows “BLOCK”.

1. CHECK WIPER MOTOR SIGNAL

④ With CONSULT-II

Select “IPDM E/R” by CONSULT-II. With “DATA MONITOR”, make sure that “WIP AUTO STOP” turns “ACT P” - “STOP P” linked with front wiper operation.

⊗ Without CONSULT-II

GO TO 2.

OK or NG

- OK >> Replace IPDM E/R.
NG >> GO TO 2.

DATA MONITOR			
MONITOR			
WIP AUTO STOP		STOP P	
		RECORD	
MODE	BACK	LIGHT	COPY

PKIA7614E

2. CHECK WIPER AUTO STOP CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and front wiper motor connector.
3. Check continuity between IPDM E/R harness connector E7 terminal 32 and front wiper motor harness connector E52 terminal 4.

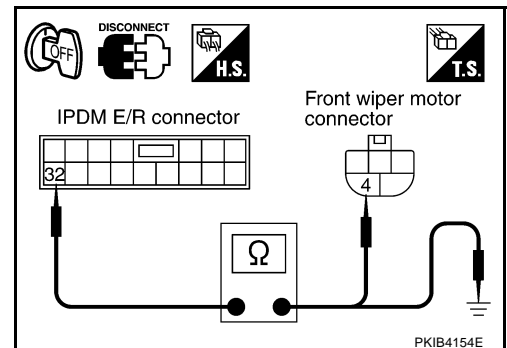
32 - 4 : Continuity should exist.

4. Check continuity between IPDM E/R harness connector E7 terminal 32 and ground.

32 - Ground : Continuity should not exist.

OK or NG

- OK >> GO TO 3.
NG >> Repair harness or connector.

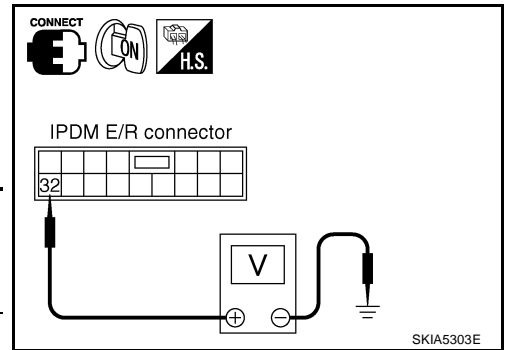


FRONT WIPER AND WASHER SYSTEM

3. CHECK FRONT WIPER MOTOR

1. Connect IPDM E/R connector and front wiper connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector E7 terminal 32 and ground while front wiper motor is stopped and while it is operating.

Terminal		(-)	Condition	Voltage
IPDM E/R (+)				
Connector	Terminal			
E7	32	Ground	Wiper stopped	Approx. 0V
			Wiper operating	Battery voltage



OK or NG

- OK >> Replace IPDM E/R.
 NG >> Replace front wiper motor.

Front Wiper Does Not Stop

1. CHECK CIRCUIT BETWEEN COMBINATION SWITCH AND BCM

With CONSULT-II

1. Select "BCM" on CONSULT-II, and select "WIPER" on "SELECT TEST ITEM" screen.
2. Select "DATA MONITOR" on "SELECT DIAG MODE" screen. Make sure that "FR WIPER INT", "FR WIPER LOW", "FR WIPER HI", and "FR WASHER SW" turn ON-OFF according to wiper switch operation.

Without CONSULT-II

Refer to [LT-128, "Combination Switch Inspection"](#) .

OK or NG

- OK >> Replace IPDM E/R.
 NG >> Check combination switch (wiper switch). Refer to [LT-128, "Combination Switch Inspection"](#) .

DATA MONITOR	
MONITOR	
IGN ON SW	ON
IGN SW CAN	ON
FR WIPER HI	OFF
FR WIPER LOW	OFF
FR WIPER INT	OFF
FR WASHER SW	OFF
INT VOLUME	7
FR WIPER STOP	ON
VEHICLE SPEED	0.0 km/h
Page Down	
RECORD	
MODE	BACK
LIGHT	COPE

FRONT WIPER AND WASHER SYSTEM

Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location

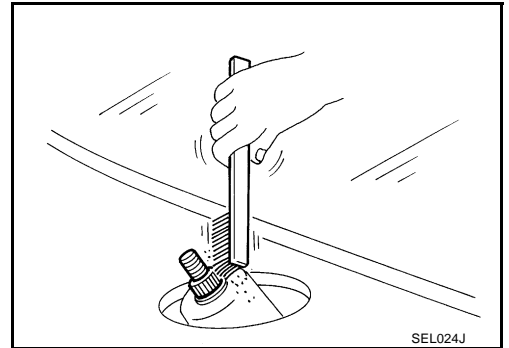
NKS000ZR

REMOVAL

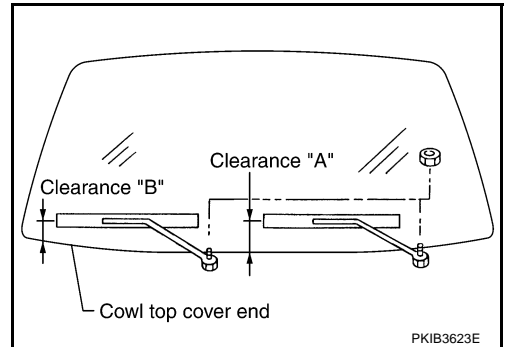
1. Operate wiper motor, and stop it at auto stop position.
2. Remove washer tube from washer tube joint.
3. Remove wiper arm mounting nuts and wiper arm from vehicle.

INSTALLATION

1. Clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



2. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
3. Push wiper arm onto pivot shaft, paying attention to blind spline.
4. Attach washer tube to washer tube joint.
5. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "A" & "B" immediately before tightening nut.
6. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
7. Ensure that wiper blades stop within clearance "A" & "B".



Clearance "A" : 47.1 - 62.1 mm (1.854 - 2.445 in)

Clearance "B" : 32.1 - 47.1 mm (1.264 - 1.854 in)

- Tighten wiper arm nuts to specified torque.

Front wiper arm nuts  : 23.6 N·m (2.4 kg-m, 17 ft-lb)

CAUTION:

Never operate front wiper when engine hood is being open.

ADJUSTMENT

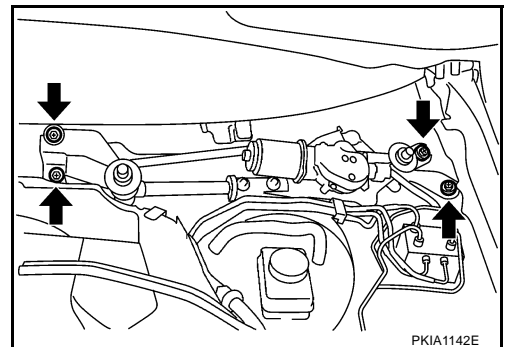
Refer to [WW-32, "INSTALLATION"](#)

Removal and Installation of Front Wiper Motor Assembly

NKS000ZS

REMOVAL

1. Remove wiper arm. Refer to [WW-32, "REMOVAL"](#).
2. Remove cowl top cover. Refer to [EI-21, "COWL TOP"](#).
3. Remove washer tube.
4. Disconnect wiper motor connector.
5. Remove wiper motor assembly bolts, and remove wiper motor assembly.



FRONT WIPER AND WASHER SYSTEM

INSTALLATION

1. Install wiper motor assembly to the vehicle.
2. Connect wiper motor assembly to connector. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
3. Attach washer tube to connector joint.
4. Install cowl top cover. Refer to [EI-21, "COWL TOP"](#) .
5. Install wiper arms. Refer to [WW-32, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location"](#) .
6. Attach wiper arm washer tube.

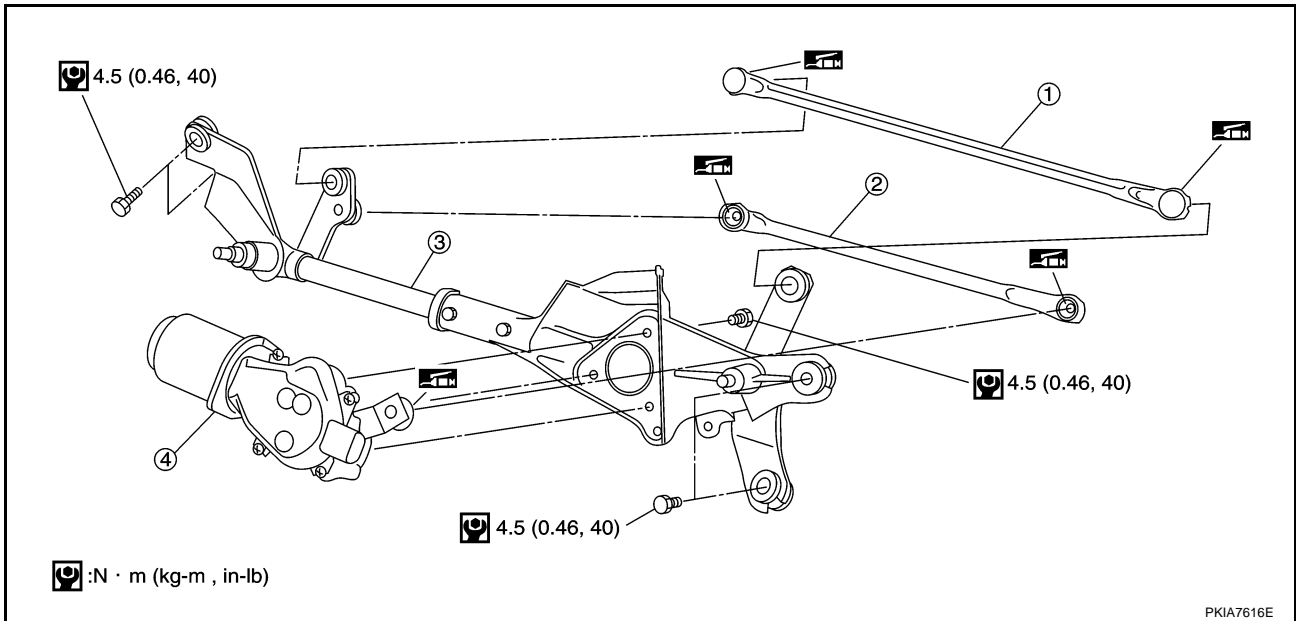
Wiper motor assembly bolts  : 4.5 N·m (0.46 kg-m, 40 in-lb)

CAUTION:

- Never drop wiper motor or cause it to contact other parts.
- Check grease conditions of motor arm and wiper link joint (at retainer). Apply grease if necessary.

Disassembly and Assembly of Front Wiper Motor Assembly

NKS000ZT




1. Wiper link
2. Wiper link
3. Wiper frame
4. Wiper motor

DISASSEMBLY

1. Remove wiper link from wiper frame and motor arm.
2. Remove wiper motor bolts, and remove wiper motor from wiper frame.

ASSEMBLY

Assemble is the reverse order of disassembly.

Wiper motor bolts  : 4.5 N·m (0.46 kg-m, 40 in-lb)

FRONT WIPER AND WASHER SYSTEM

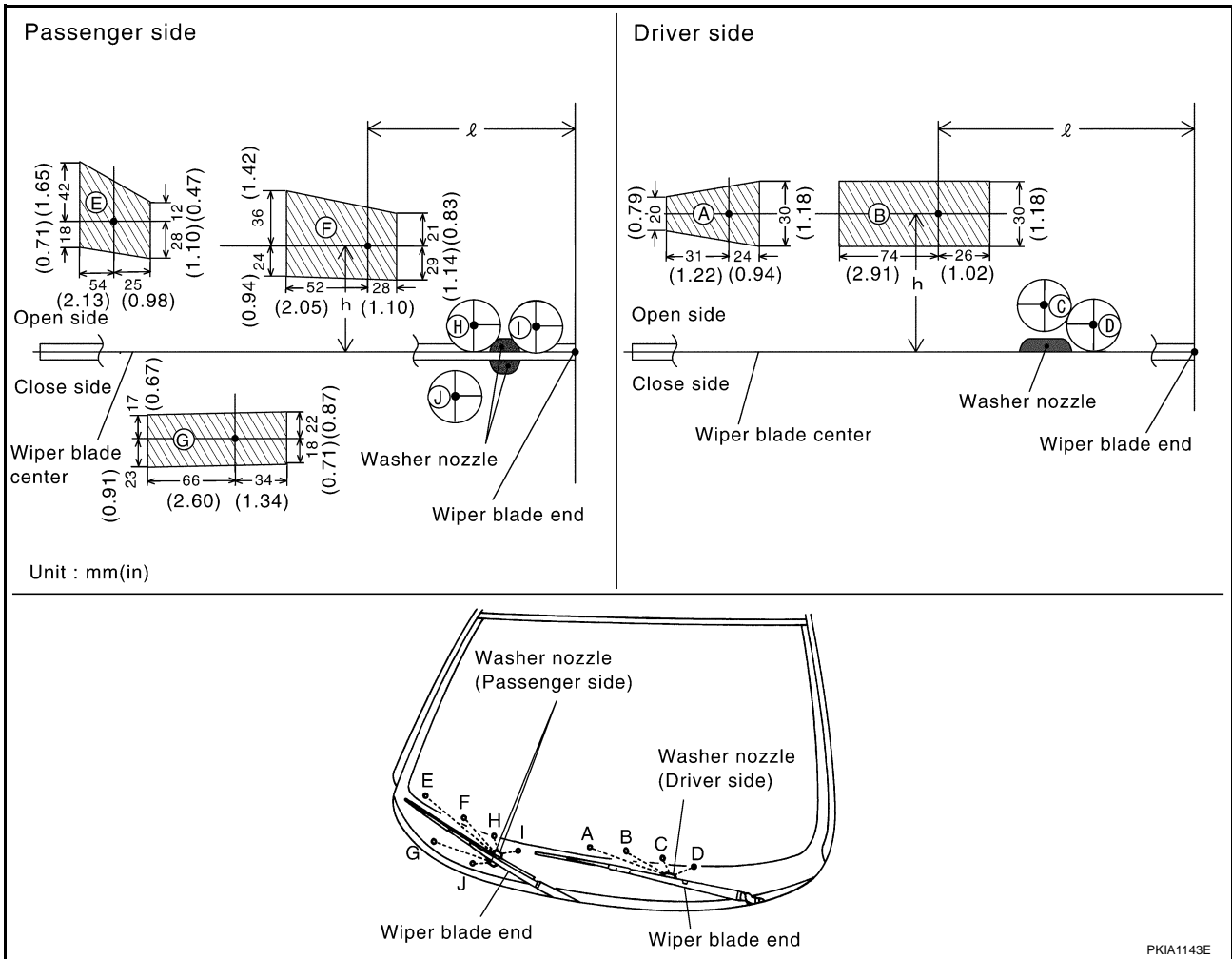
NKS000ZU

Washer Nozzle Adjustment

1. When wiper blade position is in auto stop condition, remove wiper motor connector to ensure wiper arms do not move.
2. Adjust each nozzle position (A, B, E, F, and G) so that spray positions are in the range of shaded parts.

CAUTION:

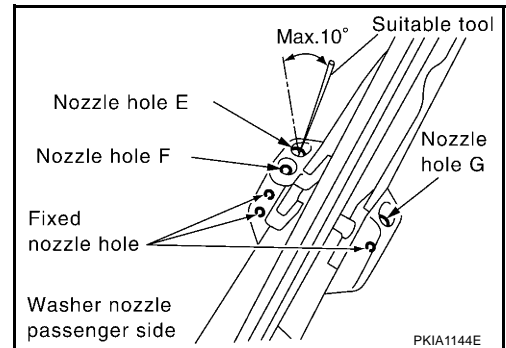
Only washer nozzles (A, B, E, F, and G) can be adjusted. Washer nozzles (C, D, H, I, and J) cannot be adjusted because of fixed nozzles.



PKIA1143E

Unit: mm (in)

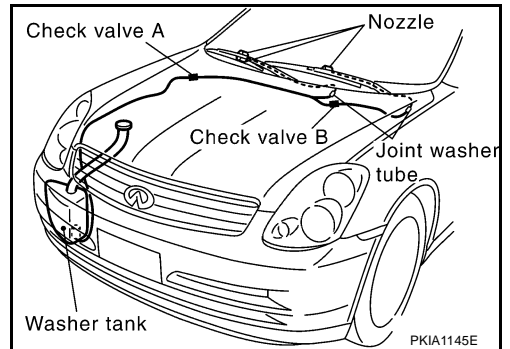
Spray position	h (height)	ℓ (width)
A	25 (0.98)	339 (13.35)
B	25 (0.98)	176 (6.93)
(C)	—	—
(D)	—	—
E	53 (2.09)	306 (12.05)
F	39 (1.54)	158 (6.22)
G	32 (1.26)	244 (9.61)
(H)	—	—
(I)	—	—
(J)	—	—



FRONT WIPER AND WASHER SYSTEM

Washer Tube Layout

NKS000ZV



Removal and Installation of Front Washer Nozzle

NKS000ZW

Replace wiper arm assembly. Refer to [WW-32, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location"](#).

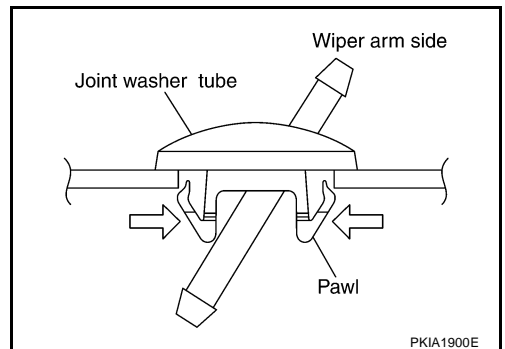
CAUTION:

Removal/installation of washer nozzle as a unit must not be done.

Removal and Installation of Front Washer Joint

NKS000ZX

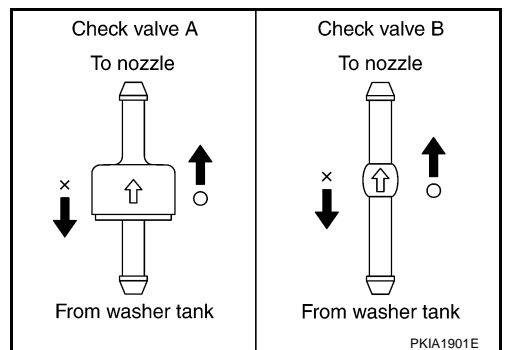
1. Remove upwards while pressing tab on reverse side.
2. Remove washer tube.



Inspection of CHECK VALVE

NKS000ZY

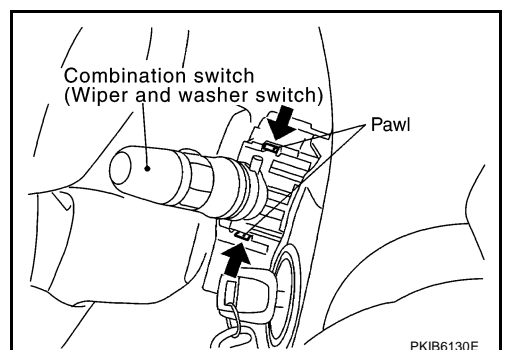
Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.



Removal and Installation of Front Wiper and Washer Switch

NKS000ZZ

1. Remove steering column cover. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting bolts of cluster lid A and combination meter. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
3. Pull wiper and washer switch toward passenger door while pressing pawls in direction shown by the arrow in the figure, and remove it from the base.
4. Remove wiper and washer switch connector.

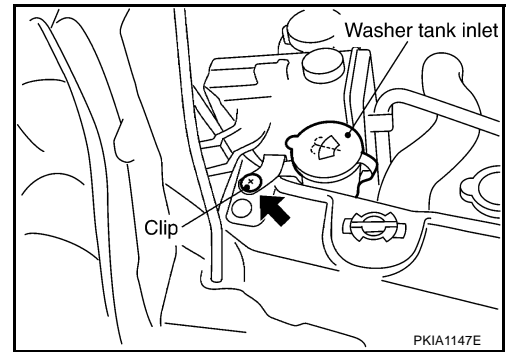


FRONT WIPER AND WASHER SYSTEM

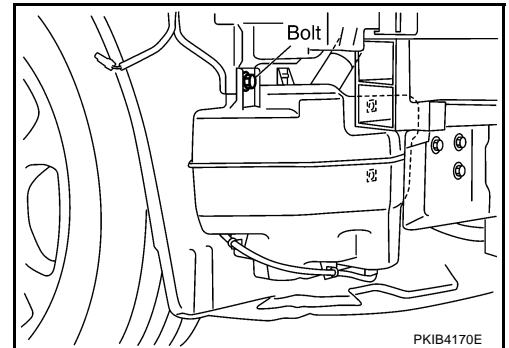
Removal and Installation of Washer Tank REMOVAL

NKS00100

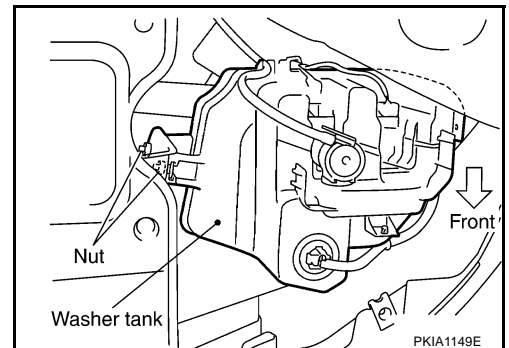
1. Pull out washer tank inlet.



2. Remove fender protector in the right side. Refer to [EI-22](#), "[FENDER PROTECTOR](#)".
3. Remove right half of front bumper fascia. Refer to [EI-14](#), "[FRONT BUMPER](#)".
4. Remove washer pump connector.
5. Remove washer tank installation bolt and nuts.



6. Remove washer tube, and remove washer tank from the vehicle.



INSTALLATION

Installation is the reverse order of removal.

CAUTION:

After installation, add water up to the upper level of washer tank inlet, and check for water leaks.

Washer tank installation bolt and nuts  : 5.7 N·m (0.58 kg·m, 50 in·lb)

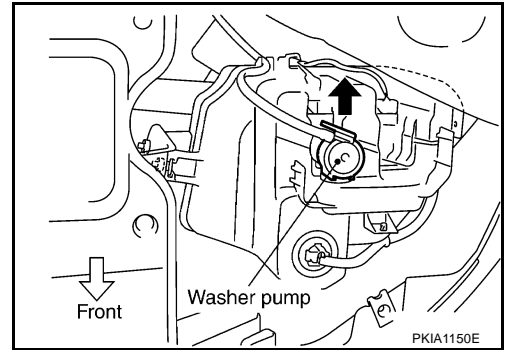
FRONT WIPER AND WASHER SYSTEM

Removal and Installation of Washer Pump

NKS00101

REMOVAL

1. Remove fender protector in the right side. Refer to [EI-22](#), "[FENDER PROTECTOR](#)".
2. Remove washer pump connector and tube.
3. Pull out washer pump in direction shown by the arrow in the figure. Remove washer pump from washer tank.



INSTALLATION

Installation is the reverse order of removal.

CAUTION:

When installing washer pump, there should be no packing twists, etc.

A
B
C
D
E
F
G
H
I
J
L
M

WW

CIGARETTE LIGHTER

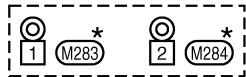
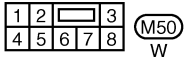
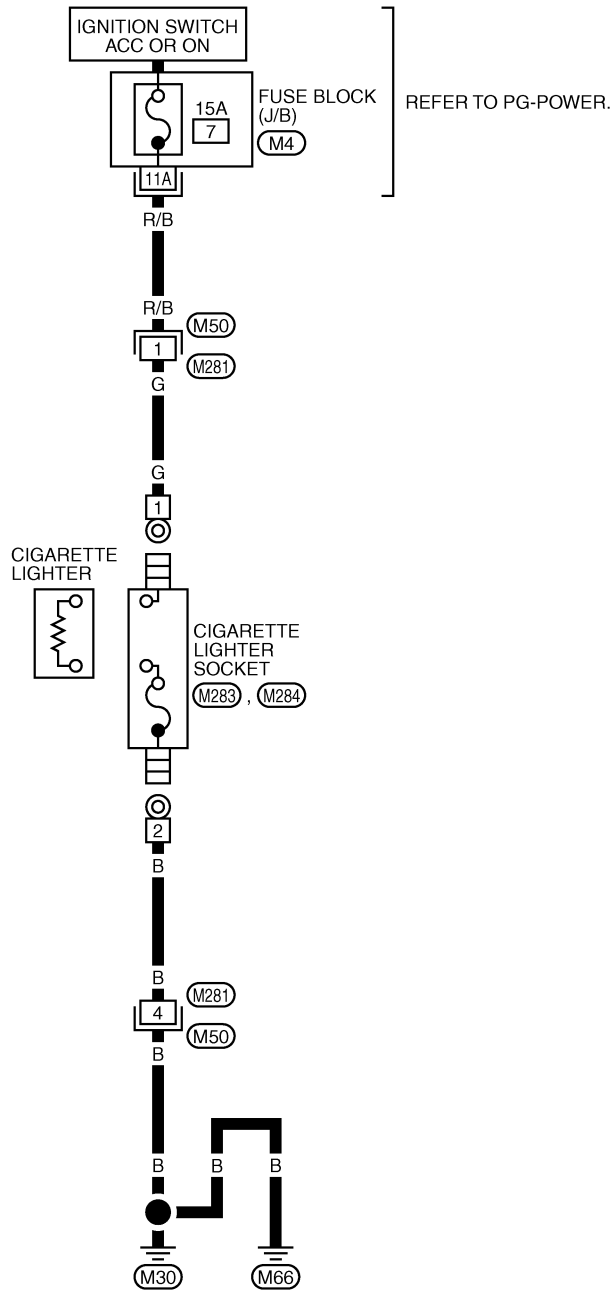
PFP:35330

CIGARETTE LIGHTER

Wiring Diagram — CIGAR —

NKS00102

WW-CIGAR-01



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

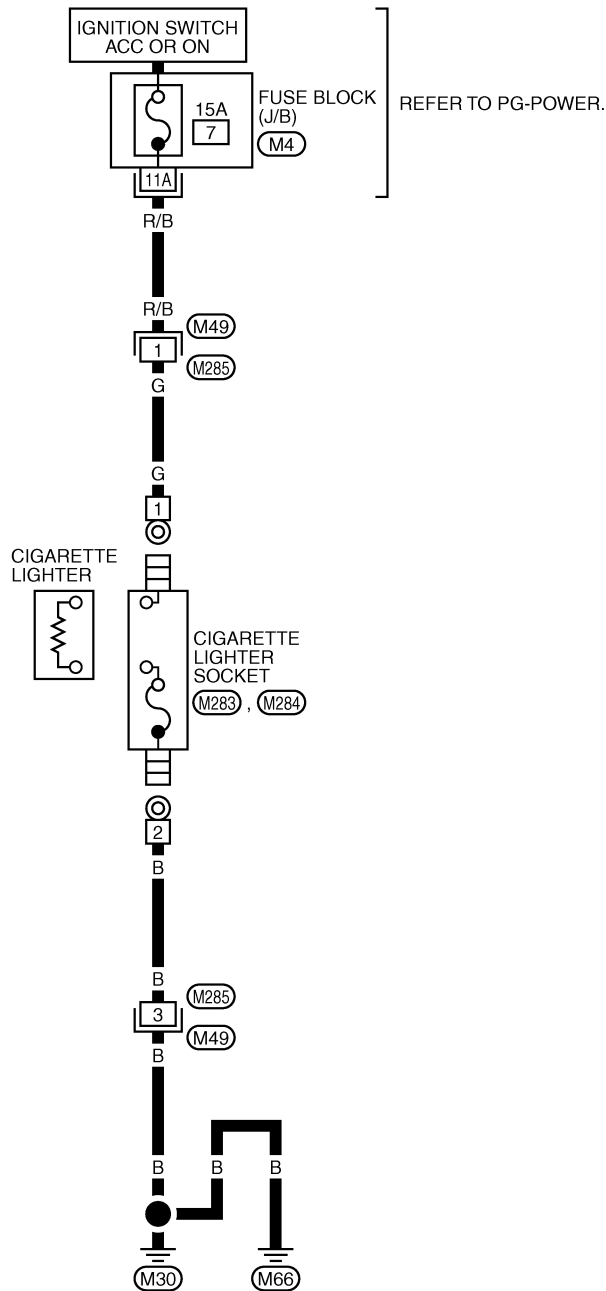
REFER TO THE FOLLOWING.

(M4) -FUSE BLOCK-JUNCTION BOX (J/B)

TKWM2108E

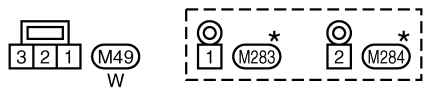
CIGARETTE LIGHTER

WW-CIGAR-02



A
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K
L
M

WW



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

REFER TO THE FOLLOWING.
 (M4) - FUSE BLOCK-JUNCTION BOX (J/B)

TKWM2948E

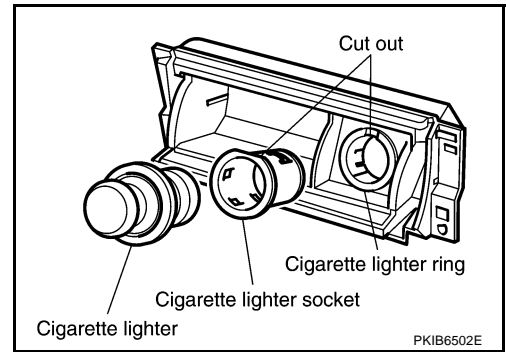
CIGARETTE LIGHTER

NKS00103

Removal and Installation

REMOVAL

1. Pull out the cigarette lighter.
2. Insert a thin screwdriver between the cigarette lighter socket and cigarette lighter ring. Then pry out the cigarette lighter socket.



INSTALLATION

Installation is the reverse order of removal.

NOTE:

Install the cigarette lighter socket with its cut out aligned with that on the cigarette lighter ring.

POWER SOCKET

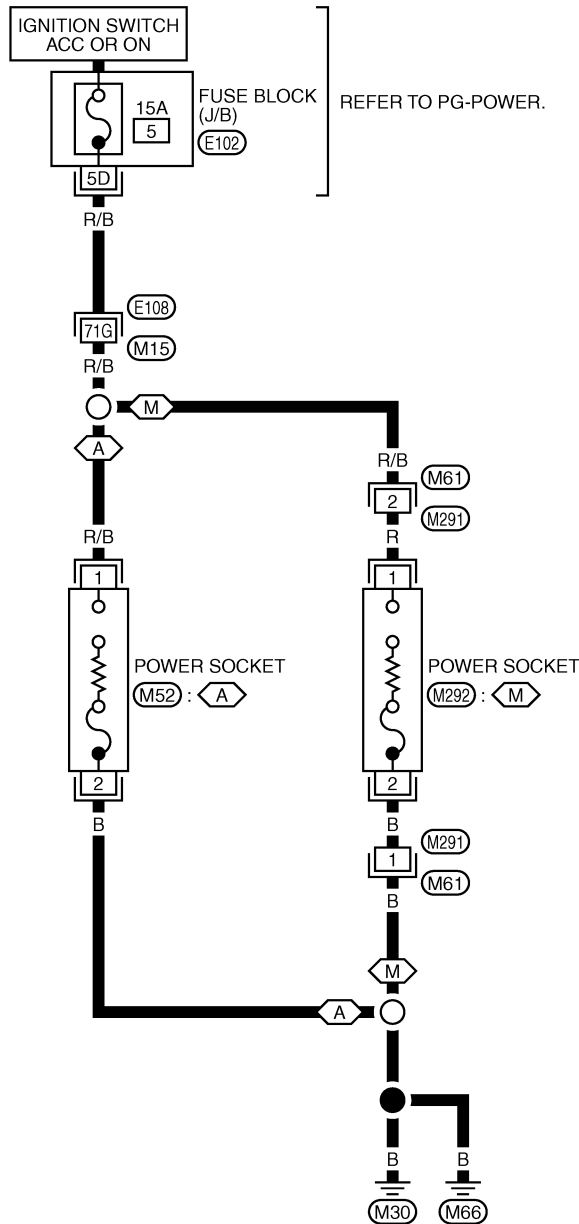
PFP:253A2

POWER SOCKET

Wiring Diagram — P/SCKT —

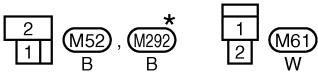
NKS00104

WW-P/SCKT-01



⬡ : WITH A/T
⬡ : WITH M/T

REFER TO PG-POWER.



*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

REFER TO THE FOLLOWING.

- ⬡ -SUPER MULTIPLE JUNCTION (SMJ)
- ⬡ -FUSE BLOCK-JUNCTION BOX (J/B)

TKWM2947E

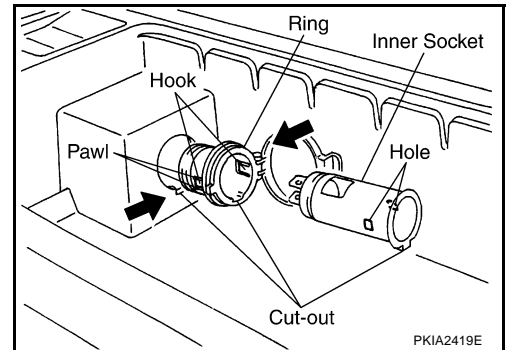
POWER SOCKET

Removal and Installation of Console Power Socket

NKS00105

REMOVAL

1. Remove the console box assembly. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) in "IP" section.
2. Disconnect power socket connector.
3. While pressing hooks on ring through the holes of inner socket, remove socket from ring.
4. Remove ring from console box while pressing pawls.



INSTALLATION

Installation is the reverse order of removal.

HORN

PPF:25610

NKS00106

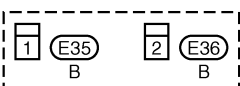
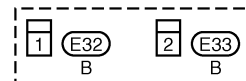
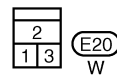
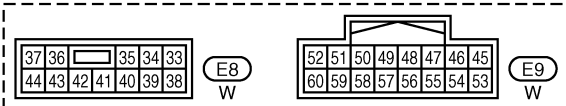
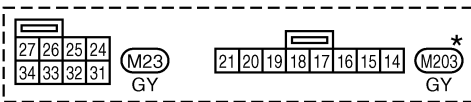
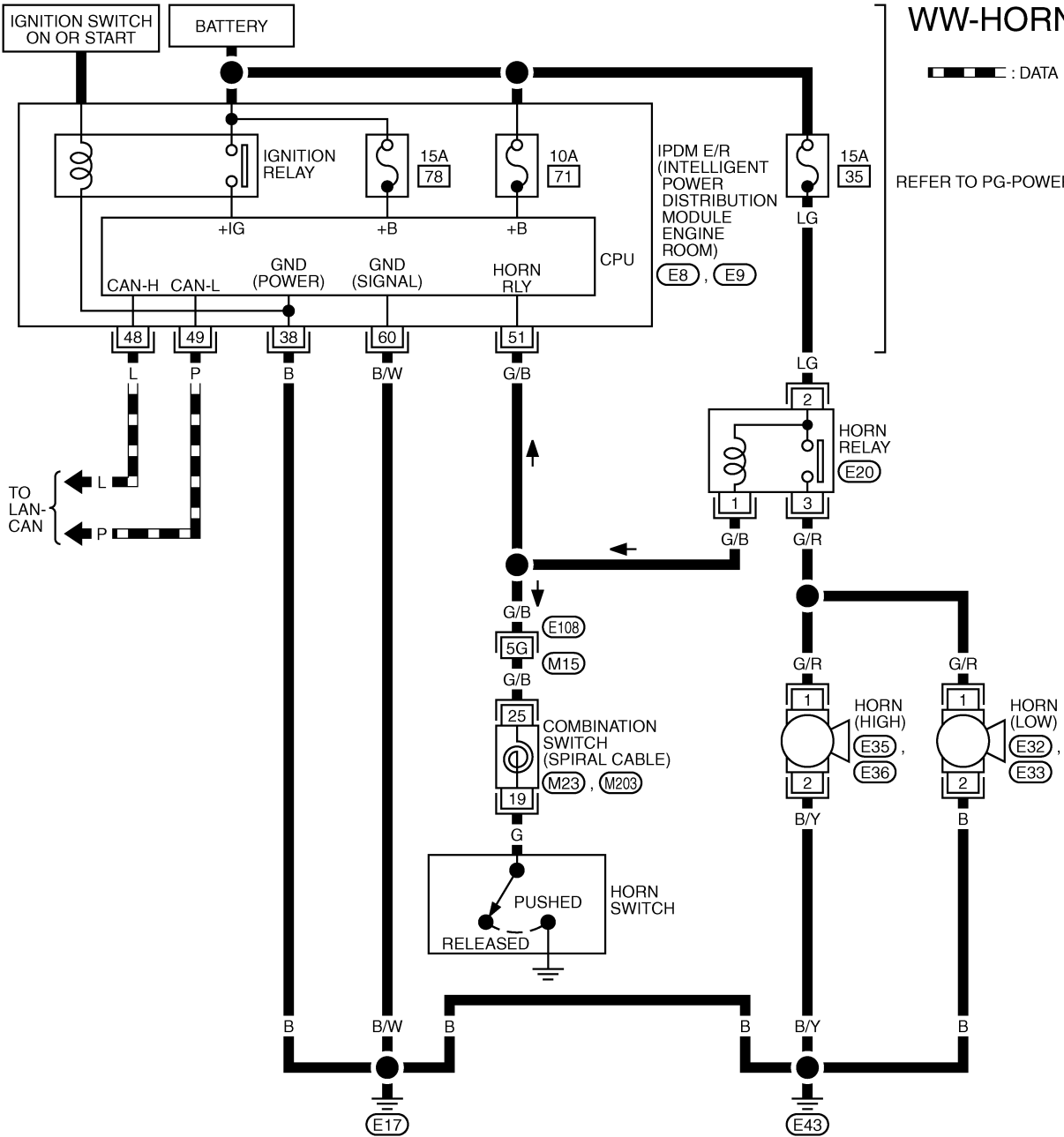
HORN

Wiring Diagram — HORN —

WW-HORN-01

— — — — — : DATA LINE

REFER TO PG-POWER.



REFER TO THE FOLLOWING.

(E108) -SUPER MULTIPLE JUNCTION (SMJ)

*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

A
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K
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M

WW

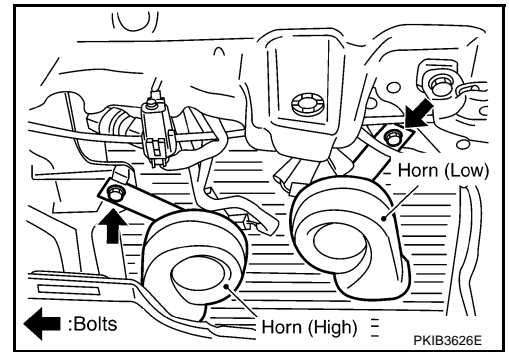
HORN

NKS00107

Removal and Installation

REMOVAL


1. Remove front grille. Refer to [EI-20, "Removal and Installation"](#) in "EI" section.
2. Disconnect all horn connectors.
3. Remove horn mounting bolt and remove horn from vehicle.



INSTALLATION

Installation is the reverse order of removal.

- Tighten horn bolt to specified torque.

Horn mounting bolt  : 5.7 N·m (0.58 kg·m, 50 in·lb.)